

WORLD THAT WORKS

a pattern language

by Jim Applegate

[Preface](#)

[Introduction](#)

[Patterns](#)

PREFACE

As a young college student, I decided that humanity needed to be saved and it looked like I was the one who was going to have to do it. Like many of us that age, I was overwhelmed by my first taste of reality. I was starting to see the world outside of the protective shell my parents had provided. The gentle world I'd grown up in had serious problems, and they seemed to develop and multiply overnight. I couldn't believe that the adults of the previous generation -- especially my parents -- could have let things get so bad.

It was easy to identify what was wrong. Problems were broadcast all over the nightly news, published in magazines, and highlighted in our classes. On a college campus, they seemed to be everywhere. And the solutions were painfully obvious -- just stop doing the bad things. Stop polluting; stop cutting down trees; stop making nuclear bombs.

For those of you who may be in the midst of such thinking, let me say that it is not your parents' fault. The problems we face today are similar to the problems faced by generations of our ancestors, and many of the problems have been around as long as humans have been humans. The reality about our reality is that our world is complex and solutions are almost never as simple as they seem.

While my judgement of those before me has softened, my opinion that things could be done better has remained.

INTRODUCTION

People often say they would like to make the world a better place. That sounds harmless enough, but it begs the question "what do we mean by better?" It could be argued that Hitler thought he was making the world a better place, at least for the German people. Some people see segregation, genocide, or terrorism as the path to a better world. So "better" is simply too subjective a term to be useful.

Even if your concept of a better world is one that includes justice and equality, you may not know how to go about creating it. Perhaps you think that you don't have what it takes to make a difference, even if you tried. Or maybe you're out there gamely trying, but are finding it frustrating because it feels like you're spinning your wheels, expending a lot of energy and getting nowhere.

If we are to spend significant parts of our lives working to create such a "better" world, we need to look at what we mean by "better" and what we know about how to create it. No one wants to spend their life in an effort that proves to be useless or worse, creates more problems than it solves.

World That Works is my attempt to define what it means to create a better world in a way that accommodates all humanity. In the past, it may have been possible to create isolated societies that approached a kind of Utopia, but this is a global community now and we can no longer take such a small view of the problem. It will have to be success for everyone or we will just have more of the same: more wars, more poverty, more suffering.

We can learn from our successes as well as our mistakes, and we can begin to identify the concepts that define a world that promotes peace and prosperity for everyone. In this book, those concepts take the form of patterns.

These patterns can act as a guide to describe what a better world could look like and how we might, as individuals, make contributions that help bring about that world.

Why a Pattern Language?

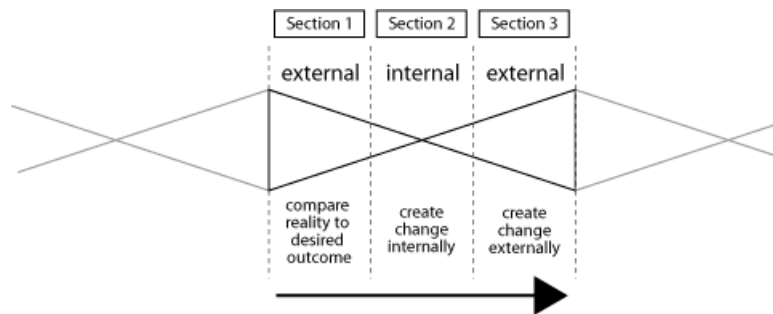
I have chosen to put these ideas into the form of a pattern language for a number of reasons, but the main reason is that it embodies the principles of good communication as outlined in a number of patterns.

How the Book is Organized

The arrangement of patterns follows a process that Buckminster Fuller called "teleology." It's the idea that change follows a particular cycle, a wave pattern of sorts. In the first phase, we perceive the world, trying to understand it in meaningful ways. In the second phase we go inward and try to envision a better way to do it. We literally change the model of the world we have within us to include our new designs and ideas. In the

last phase we go outward again, creating the change in the external world. By reducing our ideas to practice, we test our internal model of the world and see if what works in our minds actually works in the physical world. The changed world then becomes our starting point for the next wave or cycle.

We go through this process all the time as we recreate our world to better suit us. When you arrange the furniture in a room, you look at the current layout to begin with, imagine what might work better, then move the furniture to match your inner vision. Once it's moved, you see whether it works or not and make further adjustments as needed. We can do the same thing on a larger scale and affect the human-designed world with our ideas, rearranging the furniture of civilization to create a world that works for everyone.



The first section of the book describes the patterns in the human designed world that seem to move us in the right direction. It's important to understand that these patterns reflect the world as it is, at least in part. Humans have tried all kinds of approaches to creating a better world, and these patterns are an attempt to capture the ones that seem to be working.

The second section contains patterns of thinking that we can use as individuals to see the world as objectively as possible and identify opportunities for improvement.

The third section contains patterns that describe how we can take our unique perspective and experiences and use them to create a change in the world that moves all of us toward a future in which everyone is successful.

Note Pad:

- I stated my goal at one point this way: To establish a knowledge resource system that makes available to all humanity, humanity's best current collective knowledge of how to make the world work for 100% of humanity, presented in the best form to ensure the most people will be able to use the information.
- About patterns: each pattern is part of a large whole and can be combined with other patterns in a myriad of ways. It is this flexibility that makes patterns so powerful.

PATTERNS

We begin with those patterns which define what we mean by a world that works for all humanity and what it might look like. These patterns are too broad to be designed and built all at once, but they provide a context for the work that needs to be done and can act as guides for how we approach our individual contributions. If we integrate these patterns into our thinking, our collective works will begin to create a world with these patterns in it.

(top)

1 WORLD THAT WORKS

(main-goals) Before we can say that we have a world that works, we have to define what that means;

2 EVERYONE LIFTED UP

3 HIGHEST STANDARD OF LIVING

4 SUCCESS AS THE NORM

5 CONTINUING SUCCESS

6 REGENERATIVE SUCCESS

7 STEWARDS OF EARTH

(environmental-goals) work to protect and maintain the natural systems that we depend upon;

8 HEALTHY NATURAL SERVICES

9 STABLE CLIMATE

10 DIVERSITY OF LIFE

(natural-places) within these natural systems, encourage the formation and protection of natural places that experience limited human impact;

11 WILD PLACES

12 SPACE FOR OTHER LIFE

(community) organize people according to physical, cultural and political realities into regions that are small enough for individuals to have a say in how they are run;

- 13 ONE-WORLD CITIZENSHIP
- 14 UNION OF WORLD COMMUNITIES
- 15 SUBCOMMUNITIES OF WORLD MAN

(world-service-industries) work to provide basic needs globally by building the industries and infrastructure required to take advantage of global scale efficiencies;

- 16 INDUSTRIALIZATION
- 17 LIVINGRY INDUSTRIAL COMPLEX
- 18 WORLD SERVICE INDUSTRIES
- 19 DECENTRALIZED GLOBAL INDUSTRY
- 20 GLOBAL ENERGY NETWORK
- 21 GLOBAL COMMUNICATIONS NETWORK
- 22 GLOBAL TRANSPORTATION NETWORK
- 23 HEALTH CARE SYSTEM
- 24 EDUCATIONAL SYSTEM
- 25 HOUSING INDUSTRY
- 26 CLOTHING INDUSTRY
- 27 FOOD PRODUCTION INDUSTRY
- 28 GLOBAL WATER SYSTEM

(macroeconomics) build sustainable economic systems by basing them on renewable energy and concepts compatible with the reality of finite physical resources;

- 29 ENERGY ACCOUNTING
- 30 GLOBAL ENERGY BUDGET
- 31 WEALTH AS CAPACITY
- 32 GROWTH BY EPHEMERALIZATION
- 33 ACCOUNTABLE CORPORATION
- 34 TEMPORARY OWNERSHIP ECONOMY

(public-service) within the independent regions, establish ways to make sure people have a say in how things are done;

- 35 GOVERNMENT
- 36 FREE PRESS
- 37 TRANSPARENT POWER

(stable-state) ensure that each independent region has the elements of a stable state;

38 STANDING MILITARY

39 POLICE FORCE

40 JUDICIAL SYSTEM

(human-rights)

41 BASIC HUMAN RIGHTS

42 INDIVIDUAL INFLUENCE

43 EDUCATION FOR EVERYONE

(local-infrastructure) build the infrastructure that is local and
needs to be in local control;

44 SEWAGE TREATMENT

(social-services) ensure that important social services are
available regardless of where people live;

45 AVAILABLE ENERGY

(ethics)

46 SCIENCE OF ETHICS

47 THE ETHICAL RULE OF LAW

48 MINIMAL INTERFERENCE

49 UNIVERSAL ADVANTAGE

(belief-systems) work to ensure that the belief systems people are
basing their actions on reflect reality;

50 RATIONAL SPIRITUAL LIFE

(children) encourage the idealism of youth to have the courage to
embrace the kind of change that is needed;

51 ADVANTAGED NEW LIFE

52 MODELS OF THE INVISIBLE

(design-science)

53 DESIGN SCIENCE REVOLUTION

54 COMPREHENSIVE COORDINATION

(intellectual-resources)

55 UNIVERSE

56 INTELLECTUAL HERITAGE

57 LIVING LIBRARY

This completes the broad patterns that define the fundamental requirements of a world that works for all humanity. We now start the part of the language which gives shape to the primary tool used to create such a world — your mind. These are patterns of thinking which can help you understand the world more comprehensively and discover the unique contributions that you have to offer. These patterns are under your complete control as you are the only one who can change how you think.

(being-an-individual) it takes a true individual to make a significant contribution to a better world;

- 58 COMPREHENSIVIST
- 59 YOUR OWN THINKING
- 60 ACCURATE PERSONAL UNIVERSE
- 61 TRAINED MIND
- 62 SELF-DIRECTED LEARNER
- 63 SELF DISCIPLINE

(getting-started) to get started on your adventure, try setting up your life in a way that accomodates your new activities;

- 64 TIME TO THINK
- 65 INTERRUPTABLE LINE OF THOUGHT
- 66 ELIMINATING DISTRACTIONS
- 67 A PLACE TO THINK
- 68 HOME LABORATORY
- 69 EXTENDED LIBRARY

(understanding-yourself) explore your mind and your unique knowledge and experiences so you can better understand yourself and how you might be able to contribute;

- 70 MULTIPLE INTELLIGENCES
- 71 LANGUAGE AND CULTURE
- 72 LEARNING STYLE
- 73 CONSCIOUS PHILOSOPHY
- 74 TESTED ASSUMPTIONS
- 75 EMOTIONAL LITERACY
- 76 PERSPECTIVE
- 77 AUDIBLE INTUITION

(passion) look for the reasons you want to work on something like

this, and nurture your passions to keep you moving forward;

- 78 SERVICE TO HUMANITY
- 79 REGENERATIVE THOUGHT
- 80 POLLYANNAESQUE VIEWPOINT
- 81 SUPPORT FROM OTHERS
- 82 ACHIEVEMENT ROLE MODELS
- 83 BEHAVIORAL ROLE MODEL
- 84 IMAGINATION
- 85 CURIOSITY
- 86 BALANCED LIFE
- 87 FLOW

(spirituality) as human beings, we are not privy to all the workings of Universe. That sense of there being more to things than what we can see is at the heart of spirituality;

- 88 FUNDAMENTAL MYSTERY

(learning) The process of learning is the process of solving problems; in both cases we start with a question and seek and answer. These patterns look at learning in the context of creating change;

- 89 LEARNING AS PROBLEM SOLVING
- 90 EDUCATIONAL EXPERIENCE
- 91 LEARNING BY UNDERSTANDING
- 92 RETHINKING
- 93 TIME TO ABSORB NEW KNOWLEDGE
- 94 TEACHING TO LEARN
- 95 WRITING TO LEARN
- 96 TEMPORARY SPECIALIST

(knowledge) work to look at your knowledge in ways that help keep you flexible and open to new ideas;

- 97 KNOWLEDGE AS HYPOTHESIS
- 98 ACCEPTED IGNORANCE
- 99 LEVELS OF KNOWING
- 100 HIGH QUALITY KNOWLEDGE

(integrating-knowledge) as you gain more knowledge, strengthen it and extract the most meaning you can by integrating it with the other things you know;

- 101 START WITH UNIVERSE

- 102 EVERYTHING CONNECTED
- 103 SPIRAL OF THINKING
- 104 TUNED FILTERS
- 105 FILLING IN THE GAPS
- 106 RECONCILED CONTRADICTION

(cleaning-your-universe) to create a more accurate personal universe, develop habits that can serve to find inconsistencies, false information, and avoid other cognitive biases;

- 107 ACTIVE MIND
- 108 JUST ENOUGH LEARNING
- 109 MULTIPLE CONCLUSIONS
- 110 ACCURATE LANGUAGE
- 111 SUSCEPTIBLE TO PROGRESS
- 112 HEALTHY SKEPTICISM

(landmarks) build in your mind the landmarks that will help you use your mind more effectively;

- 113 TOOLBOX OF SYMBOLS
- 114 REFERENCE NUMBERS
- 115 MEMORY FRAMEWORKS

(thinking-tools) to aid in your thinking, take advantage of some of the tools and techniques we have invented to compensate for some of the limitations of the human mind;

- 116 BRAINSTORM
- 117 SKETCH
- 118 COMPUTER MODEL
- 119 MIND MAP

(mind-extensions) including those tools that help us get a handle on complex ideas where there are many elements that need to be worked through;

- 120 CONVENIENT NOTEBOOK
- 121 SLIP FILE
- 122 PATTERN LANGUAGE
- 123 EXTENSIVE CROSS REFERENCING
- 124 WRITTEN INDEX
- 125 CHRONOFILE
- 126 INVENTORY

We now start the part of the language which explores

how we might go about creating a world that works. Specifically, these patterns define the process of comprehensive thinking.

(inspiration) to create a change in the world, you first have to be convinced that it's something you can do;

127 SENSE OF A BETTER WORLD

128 POWER TO AFFECT CHANGE

129 VISION OF THE FUTURE

130 YOUR UNIQUE CONTRIBUTION

131 RESPONSE-ABLE MIND

(strategies) look at different strategies you can use to create change;

132 COMPREHENSIVE THINKING

133 TAKING THE DESIGN INITIATIVE

134 WORK WITH EVOLUTION

135 TRIMTAB

136 ONE ON ONE CONTACT

137 BETTER TOOLS

138 REFORM THE ENVIRONMENT

139 SUFFICIENTLY DESIGNED TECHNOLOGY

140 SPONTANEOUSLY ADOPTED DESIGN

141 EPHEMERALIZATION

(toolkit) keep these tools close by so you can be more effective;

142 GENERALIZED PRINCIPLES

143 WHOLE SYSTEMS

144 GENERAL SYSTEMS THEORY

(identifying-need) the more you begin to see the world through a comprehensive perspective, begin to look for places that can be improved;

145 SOMETHING THAT NEEDS DOING

146 BEST PRACTICES

(setting-goals) once you've identified something that needs doing, decide what aspects of the problem you can explore effectively and set some goals;

147 SPIRAL OF PROGRESS

148 ANTICIPATED CHANGE

149 SCULPTED SCOPE

(planning) once you have an idea what you want to do, you will need to plan for achieving it;

150 PLAN FOR SUCCESS

151 CRITICAL PATH

152 FIRST THINGS FIRST

(getting-unstuck) use those times when you seem stuck and don't know what to do next to step back and get a bigger picture;

153 ACTION ITEMS

154 BRAIN DUMP

155 STUDY PLAN

156 THINKING OUT LOUD

(reduce-to-practice) build your idea in the real world so you can find out if it actually works;

157 PROTOTYPED CAPABILITIES

(communicating) communicate your discoveries to others and add to the intellectual heritage of humanity;

158 COMMUNICATED EXPERIENCE

WORLD THAT WORKS

a pattern language

by Jim Applegate

[Preface](#)

[Introduction](#)

[Patterns](#)

1 WORLD THAT WORKS**



The world is a human invention that is intended to improve our ability to survive and thrive on Earth; it is working well for some people and failing completely for others.

For the purposes of this book, "Earth" and "World" are two distinct things. Earth consists of the physical planet and its natural systems. The World is made up of objects and systems designed and built by humans. Earth and the World are each affected by the other in important ways, so they are not independent from one another, but in the context of an exploration of how we can create a better world, it can be useful to note that we are not trying to improve Earth directly: we are looking to improve the human inventions that have been superimposed upon Earth.

As a human-designed system, the human world is something we can change in an attempt to improve it. As it is now, it works for some people, meaning some people are enjoying a certain amount of success as a result of the current design, but it doesn't work for everyone. This pattern states that we should be striving for a world that works for everyone, not just a world that works for our country, state, community or family. Why we think this is possible and how it might happen are the subjects of other patterns.

The human world, as currently designed, is rather dysfunctional. As a result, we have to learn how to deal with its idiosyncrasies, and mold our behavior to cope with it. It's similar to having a car that is old and starting to fall apart. You learn to deal with the window that sticks and the door handle that's broken. We can learn how to deal with these things, but it takes a great deal more energy and attention than if we were driving a new, well-designed car that simply works.

The world is a complex system with many parts interacting in myriad ways to create the working world we see. People trying to understand the dynamics of complex systems have identified a phenomenon they call *emergence*. Simply put, a complex system is more than the sum of its parts; it behaves in ways that are unpredictable by looking at just the parts of the system. Buckminster Fuller called this phenomenon *synergy*.

The world is so complex, we can't know for sure what a World That Works will look like until it emerges. Part of the question is how do we encourage that property to emerge? The answer is that we can work to remove or replace systems that are actively working against success for all humanity while working to ensure that we don't create new ones. This is not an easy task. The world is dynamic and changing and some of these systems do great things for the people they help. We don't want to simply throw them away; we have to redesign them or rethink them so that they can do even more.

I'm speaking very generally of these systems now, but they are innumerable in the special cases of our lives: governments and government programs, laws, financial systems, educational institutions, transportation systems, communication technologies, urban plans, homes, offices, businesses, even social

norms and the ways we think about the world around us. In other words, the human world that we live in. No part of it is perfect; all the parts influence the whole in unintended and undesirable ways, and they all need our constant attention if we want to create a World that Works.

Therefore:

Work toward creating a world that works for all humanity, not through force or political edict, but by helping create the environment necessary for it to emerge spontaneously.



To create a world that works for everyone, we need to recognize that it's possible -- [SUCCESS AS THE NORM \(4\)](#) -- and we need to ensure that no one benefits at the expense of another -- [EVERYONE LIFTED UP \(2\)](#) -- or the planet -- [STEWARDS OF EARTH \(6\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

- Our only real option is success for everyone. We can't sustain the alternative, and we can't justify it from a moral standpoint.
- Earth is already working just fine; it's the human built *world* that we need to look at if we want to survive and thrive on Earth.
- The act of creating a world that works is the act of freeing us from the behaviors that reduce our freedom and frustrate our efforts at being complete humans.

2 EVERYONE LIFTED UP

. . . for a world that works for all humanity to emerge — [WORLD THAT WORKS \(1\)](#) — it has to be done in a way that doesn't threaten the people who are enjoying success in the current world.



We tend to think of helping others much like Robin Hood, transferring wealth from those who have it to those who need it, but that approach leads to everyone losing.

There are two aspects to this idea. One is that the rich are rich because they have exploited the poor of the world and taken what should have rightfully gone to the poor. In other words, I'm poor because you are rich. Certainly there are instances where this is the case, but as I will explain, it doesn't have to be that way. The other aspect is essentially the other side of the coin: the idea that some people will need to suffer for the others to survive and thrive. It serves as a kind of justification for those who exploit others for their own gain.

Both of these views are based on the assumption that wealth is a limited resource and there is only so much of it to go around. In game theory and economics (two disciplines that share a number of ideas) this is called a *zero-sum* situation. It can be argued, however, that wealth is limitless and can be increased to the point that there is enough for everyone -- [WEALTH AS CAPACITY \(\)](#). This is important because it fundamentally changes our working assumptions about how the world should be designed. Most of our current systems assume a situation of scarcity, a place where only the fittest survive and our primary goal is to get our share of the pie. A world in which abundance is the norm is a very different thing.

Once it becomes clear that wealth is not zero-sum, it becomes difficult to justify any enterprise where some benefit at the expense of others, in either direction: the rich benefiting at the expense of the poor or the poor benefiting at the expense of the rich. Such schemes should not be tolerated. Instead, we should embrace strategies in which everyone benefits at the expense of no one.

This does not assume that everyone will have equal success. That may occur when a World That Works emerges, but it will be uneven until then, at least. What we are looking for is a for everyone to be on an upward trend.

Therefore:

Look for solutions that are indiscriminately beneficial and lift everyone up so that everyone is on an upward curve toward success.



Insert posttext statement. . . .

Footnotes:**Counter Arguments:****Note Pad:**

- What does such a scheme look like?
- An example of how this is playing out is in the idea of "emerging economies" and how many countries are moving from developing to developed. This is turning out to be a great thing for existing developed countries because they represent a new market for our goods and services. Everyone is lifted up. The old model of development where resources are consumed to drive the growing economy must be re-thought, however, because consumption at that scale could be catastrophic tot the world at large.

3 HIGHEST STANDARD OF LIVING

... **insert context statement**



Success can be measured in a number of ways, but they all come together in what we call a "standard of living." This is the baseline for what is considered an acceptable existence on Earth.

In developed nations, most of even the poorest people enjoy a higher standard of living than that of a medieval king. We don't have to lower anyone's standard of living for all of us to be successful. We need to improve everyone's standard until we all reach the highest level possible. To do that, we need to understand what constitutes a high standard of living.

There is a great deal of evidence that suggests that the kind of consumption seen in the U.S. does not bring happiness or contentment. Once basic material needs are met, other kinds of factors begin to affect how satisfied we are with our lives.

Therefore:

Look for ways to improve everyone's standard of living, keeping in mind that a great life does not necessarily require rampant consumption.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I'm strting to think that this pattern needs to be merged with Everyone Lifted Up. It just defines how we can measure success. There is no problem statement I can see right now. (Sonya dsagreed on this, so I have left it for now.)

4 SUCCESS AS THE NORM

... **insert context statement**



There is an implicit assumption at the heart of many of our institutions that it is normal for some people to be a physical and economic success while others are left poor and starving. Success is seen as an achievement of the exceptional with most of us doomed to failure.

"...But from now on, I think we must all assume that Malthus was wrong and thus it is normal for man to be a physical and economic success... that it is abnormal for any to be a failure...." (RBF, *Utopia or Oblivion*)

We need to change the assumption that the norm is failure if we want to reach a point where everyone succeeds. We need to know that it is more than just possible; it needs to be seen as the way Universe works.

Fuller talks about Universe trying to make us all successful. I'm not sure what evidence there is that shows we are destined for success, but I also don't know what evidence -- other than historical precedence -- that shows we are destined for failure either. We have failed before, but this is a different time. We can now do so much with so little, we are capable of success for everyone.

Therefore:

Find solutions for world problems based on the assumption that we can all succeed. Our future depends not on survival of the fittest, but on all of humanity thriving.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

5 CONTINUING SUCCESS

... **insert context statement**



Humanity will only be successful if the world we create is sustainable. A short-term success at the expense of the planet or human dignity and life is more akin to suicide.

Why do we want sustainability? Because it means we can continue indefinitely. Sustainability means measuring success against whether it can be maintained over time.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

6 REGENERATIVE SUCCESS

... **insert context statement**



Success for all humanity is not a static goal. To maintain even our current level of success, our capacity to take care of people must constantly be expanding to deal with a growing population and the human desire for continuous progress.

A regenerative process is a cyclical process that builds on itself each time through the cycle. Early radios used a regenerative circuit to boost the radio signal they were receiving, creating a kind of amplifier.

A regenerative process requires that energy be added to the system each cycle. In traditional economies, this kind of growth is fueled by additional material resources, but if we are going to be sustainable in our development, our growth will have to be driven by human ingenuity. We will have to find ways to do more with the same resources.

Another way to look at it is to ask ourselves if our current success is achieved in a way that opens the door for further success or limits future success. Unrestrained consumption of resources limits future success; designing products to be recycled so that the materials can be reused more efficiently in the next retooling opens the door to greater success.

Therefore:

Build solutions to world problems that are regenerative by design. Make your solutions so that they can continually be adapted to new materials, technologies and other innovations.



One of the key ways of achieving this will be to do more with less -- [GROWTH BY EPHEMERALIZATION \(25\)](#). We can also design our solutions with the needs of the future in mind -- [ANTICIPATED CHANGE \(143\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

7 STEWARDS OF EARTH

. . . we cannot develop in a sustainable way -- CONTINUING SUCCESS (5) -- if we do it at the expense of the planet we live on.



Earth is the planet that sustains us. The human world is built upon and within the natural systems that Earth provides. As we are utterly dependent on Earth for our survival, it makes sense that we should take care of it.

As the only species on Earth capable of significantly altering Earth's natural systems, it falls on us to be keepers of the planet. This should come naturally as taking care of the planet is the same as taking care of ourselves:

"What we really are is, first of all, the whole of our body. And although our bodies are bounded with skin, and we can differentiate between outside and inside, they cannot exist except in a certain kind of natural environment. Obviously a body requires air, and the air must be within a certain temperature range. The body also requires certain kinds of nutrition. So in order to occur the body must be on a mild and nutritive planet with just enough oxygen in the atmosphere spinning regularly around in a harmonious and rhythmical way near a certain kind of warm star."

"That arrangement is just as essential to the existence of my body as my heart, my lungs, and my brain. So to describe myself in a scientific way, I must also describe my surroundings...."

— Alan Watts

The question remains, however, what we mean by being a steward of Earth. Mostly, it means not taking it for granted and including the needs of the natural systems we depend on in our thinking when we design and build our world. For much of our history, our impacts were absorbed by Earth without much fuss, but now we have exceeded the capacity of Earth to clean up our messes for us without consequences.

Therefore:

Respect the natural systems of Earth and take them into consideration when you rethink, design and build our human world. Recognize that our survival is intimately tied to the stability of those systems.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

8 HEALTHY NATURAL SERVICES

... *insert context statement*



Insert problem statement.

work to protect and maintain the natural systems that we depend upon to perform the free services essential to life on Earth.

These three former patterns should be included in the discussion: clean water, breathable air, healthy soil. Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

9 STABLE CLIMATE

... **insert context statement**



It has become clear that human activity is affecting Earth's climate. While climate change, like any change, is not necessarily bad, it is a risky business.

Most of our human-built systems, such as the systems for producing our food supply, are based on the assumption that the climate will stay relatively the same. Change can throw our systems into chaos while we scramble to adjust to a new reality. There is good reason to try and minimize the coming change.

One way to deal with climate change would be to design our systems so that they can compensate for variations in climate. We do this already with techniques such as irrigation. We can look for other ways to deal with those kinds of changes more efficiently.

Designing our systems to better deal with climate change, however, doesn't help the other species living on Earth that are affected by it. Climate change will put stress on already fragile remnants of wild ecosystems and threaten some of the last remaining habitat for some species. If we want to maintain the Earth's bio-diversity, we will need to work to maintain a stable climate.

Therefore:

Rethink our current systems, especially their use of energy, so that they have less impact on the climate. In as much as we are unable to stop climate changes from happening, look for ways to protect threatened species and look for ways to protect our human-made systems by making them more climate-independent.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

10 DIVERSITY OF LIFE

... **insert context statement**



Insert problem statement.

The diversity of life on Earth at present is the result of millions of years of evolution. We are far from understanding the significance of most of the life on Earth; it is prudent that we not wipe out species that may be key to our survival when we don't even know they exist yet.

There are a number of factors contributing to the loss of biological diversity, including habitat loss, invasive species, environmental pollution and climate change.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- E.O. Wilson's books offer much on this topic. It would be worth looking them over some more.

11 WILD PLACES

... **insert context statement**



There are many reasons, both personal and ecological, for keeping some parts of the Earth in their natural, wild state, but the human need for such places is one of the most compelling (at least to us).

As removed from our humble animal origins as we are, we still have a strong connection to our wild past. The human soul seems to need wild places to help us understand that aspect of ourselves and come to terms with who you are.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

12 SPACE FOR OTHER LIFE

... **insert context statement**



Humans have been taking over the surface of the planet and converting a wide variety of environments to our preferred niche: open savanna. Unfortunately, many of the other species living on Earth with us require a different habitat to survive.

In a radio interview on NPR, Edward O. Wilson talked about what constitutes the human niche:

(paraphrased) Human's evolved in Africa and our niche seems to be the African savanna with its sparse trees and open areas so we could see our enemies coming. We stayed in this niche until the unexplained explosive growth of the neocortex of our brains at which time we began spreading across the Earth and converting large parts of it to our preferred niche. We have been doing so ever since.

Therefore:

Make a concerted effort to leave room and habitat for plants and animals that fill different niches so other species can survive.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

13 ONE-WORLD CITIZENSHIP

. . . **insert context statement**



We are all citizens of planet Earth and it's time that our political institutions recognized that fact.

To achieve the kinds of efficiencies that will be necessary for a World that Works, there must be a free exchange of ideas, people, and materials and information around the globe. Closed borders result in artificial scarcities.

Borders and citizenship came out of the concept that we had to divide the world into sovereign nations each defending their own portion of the Earth's resources. Borders define what resources are under each nation's control, and citizenship defines who has rights to those resources. Groups of people have fought over these resources for all of history and borders are designed to keep out the enemy. In some cases, this is still a real concern, but in many cases it is not and restrictions are unnecessarily harmful.

Therefore:

Encourage open borders as much as possible to give people the ability to move freely between political areas. Where this is impossible due to security issues, look to resolve the underlying causes of the conflict.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

14 UNION OF WORLD COMMUNITIES

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This is similar to the idea of nations, but with some differences. They would probably be smaller, for one.

15 SUBCOMMUNITIES OF WORLD MAN

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- These are regional, self-governing entities.
- I may want to rename this "Independent Regions" as a way to tie this language to Christopher Alexander's *Pattern Language*. I think his concept of Independent Regions may be what I'm going after here anyway.

16 INDUSTRIALIZATION

... **insert context statement**



Industrialization is an important key to doing enough for everyone, but historically, the growth of industry caused almost as many problems as it solved.

These days, the emphasis is on the information age, but industry is where we can deal with the substance of survival. Industry is associated with pollution and bad working conditions, but it doesn't have to be that way. We need for industry to be evolving and we may even want to industrialize things that currently take human effort and time. Many environmentalists have an anti-industry attitude, but it needs to be embraced.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

17 LIVINGRY INDUSTRIAL COMPLEX

... **insert context statement**



We spend too much time and effort creating more effective ways to kill each other and much too little on creating better ways to live.

We need to develop an industry that is focused on making humanity a success. Such an industry should be an economic success. Our industry needs to be focused on things that matter not weapons or junk.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I'm using Fuller's term "livingry" which is in distinction from "weaponry", not "military", so it's an imperfect play on "military industrial complex".

18 WORLD SERVICE INDUSTRIES

... *insert context statement*



Insert problem statement.

This is Fuller's term. It may be the same as Livingry Industrial Complex
Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

19 DECENTRALIZED GLOBAL INDUSTRY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

20 GLOBAL ENERGY NETWORK

... **insert context statement**



The generation of energy, especially electricity, is extremely inefficient as it is done now.

Expanding the generation and distribution of electricity across political boundaries could significantly improve the situation.

Any plan for moving the planet away from fossil fuels as a foundation of our energy will require a global scope. Parts of Earth that are ideal for solar generation (the Sahara desert, for example) can be utilized only if we have the means for distributing the energy produced.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

21 GLOBAL COMMUNICATIONS NETWORK

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This includes the internet as well as telephony and wireless networks. This is advancing quickly right now and seems to be moving along the steeper portion of an exponential curve.
- I think to some degree I want to include this in the language because I want to indicate that while it is already happening, it is still a great tool for affecting the kind of change we want. There are still many opportunities on the web.

22 GLOBAL TRANSPORTATION NETWORK

... *insert context statement*



Insert problem statement.

Resources are unevenly distributed on our planet. If we expect to be able to take care of everyone, we need to be able to move these resources to where they are needed. There are still parts of the world that cannot be reached reliably.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

23 HEALTH CARE SYSTEM

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

24 EDUCATIONAL SYSTEM

... **insert context statement**



Education requires more than schools and teachers; it requires active learners and a culture that values knowledge over tradition.

Progress is dependent on the communication of knowledge from one generation to another. That is the role of the educational system. We tend to think of this in terms of traditional school, but the educational system is much more inclusive and expansive than just schools. It includes all the tools we use to communicate experience.

To make the current system more effective, we need to ensure that information is accurate and try to present it in the best ways we know how.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This is related to my previous thinking about "best information" and "best presentation".

25 HOUSING INDUSTRY

... *insert context statement*



Insert problem statement.

This was Fuller's emphasis. He did quite a lot in terms of defining what the housing industry could look like, and I think I should take a lot from his ideas. There have been advancements however, that I need to account for as well.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

26 CLOTHING INDUSTRY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

27 FOOD PRODUCTION INDUSTRY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

28 GLOBAL WATER SYSTEM

... **insert context statement**



Insert problem statement.

The natural distribution of water is unreliable and uneven. This is appropriate for Earth's ecosystems but not for human habitation.

Water distribution is independent of other distributions systems like food or electricity. It is also more critical to human life.

This would not be a centralized system, but it would be supported on a global level.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

29 ENERGY ACCOUNTING

... **insert context statement**



At their core, our economies are based on energy from fossil fuels which took the planet millions of years to produce. From an energy accounting perspective, fossil fuels are extremely expensive.

Energy accounting tries to look at manufacturing and other processes in terms of their overall energy consumption.

In traditional accounting, the costs of goods already includes the cost of the energy used to manufacture and transport it, but the energy cost is not "real" in the sense that it does not take into account, for example, the environmental costs of burning fossil fuels. Fuller talked about fossil fuels being expensive by virtue of the time it took Earth to produce them, but from a more practical prospective, the real costs have to do with the ways that fossil fuels work against creating a world that works. Those include war as well as environmental costs.

One technique for objectifying a particular process or product is to break it down into a series of energy transformations, always tracing the energy source to one of the planet's energy income sources: solar energy, energy from gravitational interactions such as tidal energy, and geothermal energy created by the planet's own gravitational integrity.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- There is talk of creating a carbon tax that might move things toward this idea.

Plan B talked about on Science Friday, 11 Jan 2008

30 GLOBAL ENERGY BUDGET

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

31 WEALTH AS CAPACITY

... **insert context statement**



Insert problem statement.

"Real wealth is not gold. Real wealth is knowing what to do with energy.

-- R. Buckminster Fuller, *I Seem to be a Verb*

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

32 GROWTH BY EPHEMERALIZATION

... **insert context statement**



Insert problem statement.

The idea behind this is that while current growth is generally fed by increased use of resources, there is a way you can keep growth but keep resource use steady: by doing more with less. Fuller called this ephemeralization. I'm sure there are examples of companies doing just that, even if they're not necessarily conscious of it.

Fuller also called this "multiplication by division". The idea being that if you can produce 20 widgets with 10 lbs of steel and then you redesign the widget in such a way that it uses half as much steel, you can suddenly produce 40 widgets with the same resources. You divide the same amount of steel into smaller pieces and increase the total number of widgets.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

33 ACCOUNTABLE CORPORATION

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

34 TEMPORARY OWNERSHIP ECONOMY

... **insert context statement**



When we own something we are stuck with it until it's worth our while to replace it. This slows down progress considerably.

New, more efficient technologies are slow to disseminate because people *own* the old technology. If the object were leased or could be traded in, it would be much easier and faster for everyone to upgrade. Cars are a great example of this.

The online auction also makes it possible to upgrade faster. Sellers can get rid of their old technology easier, and for many of the buyers, the purchase is an upgrade in itself.

The most efficient way to upgrade everyone is to build in a system where people can trade in their old technology for the latest version, and the old version is recycled and used to create the next generation technology.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- "As a society, we're evolving into one of temporary ownership....we used to buy and hold everything, let it gather dust or break, and then we threw it away...Eventually we will become leasers of our own property rather than owners of it." (Daniel Nissanoff, *FutureShop: How the New Auction Culture Will Revolutionize the Way We Buy, Sell, and Get the Things We REALLY Want*)
- [Temporary Ownership by Customers](#)
- [Evolving Vox: A Temporary Ownership Network](#)

35 GOVERNMENT

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I think government as a pattern is interesting because it opens the discussion up beyond the already-identified names of governments such as "democracy" and "dictatorship" and allows us to let the details of the government define what kind of government it is. This patterns is specifically to say that some kind of government is a good idea. I.e., a world that works is probably not an anarchy.

36 FREE PRESS

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

37 TRANSPARENT POWER

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

38 STANDING MILITARY

... *insert context statement*



Insert problem statement.

I'm still working on this one. There is some evidence that would suggest that having a standing military leads to more war, so I think I may want to rename this "World Militia" with the idea that the various autonomous regions would supply citizen soldiers whenever it was required to keep the peace or stop an abuse of power.

Perhaps, though, we would need to rethink the military's purpose with a greater emphasis on service. I had a dream a while back in which I was part of a military ship with all the vast resources implied by that, but our mission was to help people in places where a natural disaster has struck. Star Trek is like this. There is military might, but that is not the first reason for their existence.

I feel like there may be some within the U.S. military that see their role as diplomats and relief workers. In places like Afghanistan and Iraq, soldiers are taking on roles that go well beyond combat.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I think I will need to rename this to something that is the opposite. There is an author (I have the reference somewhere) that discusses how having a standing army is one of the worst things we can do. I guess George Washington, among others, warned against it. It establishes a need for war. You can't justify a standing military unless you have an enemy. Instead, there should be a mechanism for citizens to form into an army when needed and disbanded later, like a militia. We will still need

to defend ourselves from individuals who decide that their need for power trumps the rights of others.

- I need to look for information about non-lethal military and that kind of thing. "Non-lethal Military" might be a pattern in it's own right.

39 POLICE FORCE

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

40 JUDICIAL SYSTEM

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

41 BASIC HUMAN RIGHTS

... **insert context statement**



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- On NPR, someone who had written about *Wealth of Nations* talked about a distinction between "positive" and "negative" rights. Negative rights are rights to be free of oppression, such as a right to freedom of speech or the right to freedom of religion. These tend to be easier to guarantee because they do not require the use of limited resources. In other words, they are not zero-sum rights. Positive rights, such as the right to a good education, tend to be more zero-sum and difficult to guarantee.

42 INDIVIDUAL INFLUENCE

... **insert context statement**



Insert problem statement.

This pattern talks about the need for individuals to have the ability to affect the system, whether it is the government or private industry. This is needed to maximize the potential for improvement.

It also speaks to human rights such as freedom of speech and freedom of assembly.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

43 EDUCATION FOR EVERYONE

... *insert context statement*



Insert problem statement.

One of the United Nation's Millennium Goals is to provide elementary education to everyone on the planet.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

44 SEWAGE TREATMENT

... *insert context statement*



Insert problem statement.

Sewage treatment is generally thought of as a local service, and it probably should be that way: sewage treatment services are probably the most efficient close to the source. It may be beneficial, however, to think of sewage as being a global resource with decentralized processing facilities. Many resources are like this, including oil, coal and any mined minerals.

Sewage has the potential of generating power, supplying fertilizer, and perhaps many other important uses. If it were looked at as a resource rather than a waste product, then a real market may be able to be created from it. This is an example of what should probably be a larger pattern: "Waste as a Resource".

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- 11/16/2008 - on Science Friday today, they talked about a technique for producing hydrogen that used biodegradation as its source. The idea is that the energy produced by the breaking down of waste materials might be a great energy source. That could potentially tie sewage to the global economy as well.

45 AVAILABLE ENERGY

... *insert context statement*



Insert problem statement.

Affordable energy needs to be made available to everyone for us to achieve equality. Energy is the foundation to modernization and efficient use of resources.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- i.e. Cheap Available Energy

46 SCIENCE OF ETHICS

... **insert context statement**



Modern ethics are muddled by the attempt to impose doctrine on a more objective pursuit of ethical ideas.

Insert discussion text.

Therefore:

Work to build an ethical code based on objective measures of the amount of suffering produced by a given behavior.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- Ethics have traditionally been the domain of the religions, but that is not the best source for ethical knowledge. We need to look at ethics in terms of a more objective understanding of suffering and what leads to it, for example. I think there is a need for a science of ethics.
- *The End of Faith* talks about this a bit.

47 THE ETHICAL RULE OF LAW

... *insert context statement*



Many laws currently on the books deal with who gets what in an environment of scarcity. As an abundance model begins to take shape, the laws will need to adjust along with the situation.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- Ethics are closely related to law, but they are not necessarily consistent. In a world where ethics are determined scientifically based on something like the rule of least suffering, rather than somewhat arbitrarily dictated by religions, ethics and law can be much closer in their goals. Certainly, the laws should support these ethical ideals and not work against them.

48 MINIMAL INTERFERENCE

... **insert context statement**



Insert problem statement.

This assumes that if left to their own devices, people would do just fine. As a result, we should interfere with them as little as possible. This is equivalent to freedom.

In science, interference is caused by a force actively working against another and cancelling it out to some degree. From that perspective, minimal interference implies cooperation more than just simply leaving someone alone.

Of course, interference is seen by many as a legitimate way to counter the effects of a system (people, companies, governments) with which they disagree. In the extreme, it takes the form of monkey-wrenching, but it is also at the heart of political debate and activism. It seems important to find better ways to manage disagreement, but I'm not sure what those are yet.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

49 UNIVERSAL ADVANTAGE

... **insert context statement**



Insert problem statement.

Advantage is gained by everyone and no one gains advantage at the expense of another. It may be overstating to say that everyone gains advantage equally; there are people and places that will need greater advantage initially because this particular ethical guide has not been followed. Even in the long term, better cool-weather housing isn't going to be much advantage to people living at the equator.

The word 'advantage' is almost always used in a context of competition. If one compeditor has an advantage, then she has something that gives her the upper hand. Maybe 'advantage' isn't the correct word to use, or maybe the whole point of this pattern is to explain that 'advantage' can mean something else.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

50 RATIONAL SPIRITUAL LIFE

... *insert context statement*



Insert problem statement.

Spirituality is an important part of the human experience, but the irrational dogma that has been built up over millennia surrounding these experiences -- in the form of most religions -- is the source of a great deal of suffering and is a major obstacle to success for all humanity.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

51 ADVANTAGED NEW LIFE

. . . The Spiral o Progress shows that each generation has a greater capability than the previous one. This pattern explores how to ensure that increased capability is recognized and used to the advantage of humanity.



Insert problem statement.

New life is born into a world that has fewer limitations and more opportunities than the one their parents were born into, but when parents teach their children about the world, their lessons often include inaccurate information based on the parents' experience and the experiences of previous generations.

The idea is that young people are born into a world with different possibilities and opportunities than their parents. Fuller had great hope, for instance, in the generation born after the Moon landings. Those people never lived in a world in which landing on the Moon was considered impossible. That gives them a kind o advantage and I think it might be good to try to identify those advantages and use the perspective of the new life to bring about change -- to move up the spiral of progress.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

52 MODELS OF THE INVISIBLE

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

53 DESIGN SCIENCE REVOLUTION

... **insert context statement**



Insert problem statement.

"There is only one revolution tolerable to all men, all societies, all political systems: Revolution by design and invention."

— R. Buckminster Fuller, *I Seem to Be a Verb*

"All the world, properly informed of the design and invention revolution, would welcome it. Science, not politics, centralizes society. The telegraph wire communized the world."

— R. Buckminster Fuller, *I Seem to Be a Verb*

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

54 COMPREHENSIVE COORDINATION

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

55 UNIVERSE

... *insert context statement*



The more you think about and try to comprehend Universe, the more you have to admit that it is impossible to do so.

Universe is one of those concepts that can be both infuriating and useful. Most philosophers will agree that the objective Universe (if it even exists) is incomprehensible. But it is a useful concept when you want to as comprehensively as possible at our world's problems.

The key is to redefine Universe as the aggregate of all human experience and knowledge. In other words, we define it as everything we know about objective Universe. I call it Humanity's Universe.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- Think of all that we know about objective Universe as being humanity's Universe. And remember that as a member of humanity, you are entitled to this Universe.

56 INTELLECTUAL HERITAGE

. . . in the vast human experience, there is much that we know only because it was recorded for us. This pattern explores the historical aspects of Universe.



Insert problem statement.

One of the most interesting components of history is the built world. The built world is a record of the achievements of humans and all their ideas about creating a world. They are the artifacts of thought that like the written word, transcend time.

The Web represents a relatively new resource for our intellectual heritage. Because it is so new, however, it is more a record of our living heritage than our past. Now the experiences of millions of people are available to anyone with a browser.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

57 LIVING LIBRARY

... **insert context statement**



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

58 COMPREHENSIVIST

... **insert context statement**



As children, we are naturally curious about everything. As we get older, we tend to close our minds to whole parts of Universe that we either think we know already or think are irrelevant to us.

- ◆ Specialization is not "natural."
- ◆ The amount of time and human mind power being wasted is largely invisible to the specialist.
- ◆ This is in contrast to the specialist and the generalist.
- ◆ This is related to a number of trendy ideas with names like "holistic" or "global". People talk about the "World Man" or the "Global Village".

Hypothesis: The problems we are dealing with require both specialists and comprehensivists. With a problem like climate change, certainly there are going to be specialists who gather the data we need to understand the problem, but there need to be people who can put that data in a larger context. I think that's the kind of role that Al Gore is playing now in the context of this particular problem. Politicians are not comprehensivists, though they like to think they approach a comprehensive viewpoint collectively through debate. More often than not, they simply reach a stalemate until a true comprehensivist is able to change their thinking enough to move them forward.

Therefore:

Strive to open your mind to the ways that your experience and knowledge connects to the larger world, and try to understand your world in the ever-expanding context of Universe.



A comprehensive approach requires that you think about the world differently -- COMPREHENSIVE THINKING (127). There will be times when you will need to immerse yourself in a specialty to get the insight that you need -- TEMPORARY SPECIALIST (86) . . .

Footnotes:

Counter Arguments:

Note Pad:

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

59 YOUR OWN THINKING

... **insert context statement**



Just as our current understanding of the world is imperfect, so was the understanding of those who came before us. If we simply learn what their thoughts were without questioning them, we risk blindly accepting their mistakes as truth.

"Initiative can neither be created nor delegated. It can only spring from the self-determining individual who decides that the wisdom of others is not always better than his own." -- R.

Buckminster Fuller, *I Seem to be a Verb*

By the time we're 20 years old, most of us have spent most of our lives being told what to think. For those of us who were successful in such a situation -- doing well in school¹ -- it can be very difficult to switch gears and begin thinking for ourselves.

My realization that I needed to begin doing my own thinking came in my 20s. I was trying to make sense of the world, and I began to realize that the things I had been told -- for instance about environmental problems -- couldn't possibly all be true. About the same time, I was asked to explain my opinion about a subject and I couldn't do it. I had accepted someone else's conclusions without understanding the reasons behind it.

Therefore:

Exercise your right to think for yourself and have confidence in your abilities. Examine the wisdom of others as closely as you do your own, and don't be too surprised when your insights turn out to be more correct.



Doing your own thinking includes taking a fresh look at your assumptions — [RETHINKING \(87\)](#), and constantly testing what others tell you against your own experience — [ACTIVE MIND \(102\)](#) . . .

Footnotes:

1. Doing well in school is not necessarily due to being able to assimilate what people tell you instead of thinking for yourself. You can see school as a game of telling the teacher what he or she expects while keeping your own thinking to yourself. I suspect that Matt Wall approached school somewhat along those lines.

Counter Arguments:

Note Pad:

- see *Critical Path*, page 125 (item 9)

60 ACCURATE PERSONAL UNIVERSE

... **insert context statement.**



Your mind can be effective to the extent that its thinking is based on accurate information; unfortunately, your brain is capable of building an internal model of Universe that has little to do with reality.

- ◆ In "Origins of Knowledge and Imagination" the author talks about how the brain has to "process" what is really a very bad image from the eyes. This is just one part of the explanation of why our perceptions are so limited. It also relates to "closure" which is the ability of our minds to fill in the holes of our perception.
 - ◆ Another example is just how specialized our brains are in recognizing faces. We devote a great deal of our brain to this single task.
 - ◆ Other examples: our "blind spot" where the optic nerve enters the eye is "filled in" by our brain. In addition, there is stuff floating around in the fluid in our eyes that we never see because it is filtered out of our perception. You can see it if you look for it, but I don't recall just how to do it.
- Our personal universe is a model of what we might call "objective universe". Objective universe is one of those things that is in the realm of philosophy because we can't get away from our own perceptions and experience it directly. We have to assume it exists apart from ourselves and is not a product of our minds. By contrast, we know our personal universe is a product of our brain and mind, and as such it is under our control. Being under our control means that we can make it anything we want. It can be a complete fantasy, or we can choose to make it as accurate -- as close to Truth -- as possible.

Therefore:

Use the human ability to think to build a more complete and accurate view of reality.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

61 TRAINED MIND

... **insert context statement.**



Most of the scientific discoveries and advances happening now exist in a realm that cannot be directly experienced by our senses, but understanding and using these discoveries is critical for creating the world we need.

"...inasmuch as the great reality is all invisible, the only way man is able to treat with it is by the trained mind.... So this all has to do with the fact that man, in order to be able to cope with reality, simply has to have that kind of trained mind. So nothing is more essential to our revolution right now than the trained mind."

-- RBF, Synergetics Dictionary, A-E, p.584

It is not just thinking that you need to learn to do, but it is a particular set of disciplines that lead to original and more accurate thinking -- a trained mind.

Looking at what Fuller is saying, it seems like the idea of being able to deal with the invisible is what makes a trained mind. This is much more than just concepts like electricity, which we use but cannot see.

How do we deal with the invisible? We observe the effects of it. We may not be able to see radio waves, but we can experience them using a receiver. How they were originally discovered, I'm not sure. It may be that an experiment revealed an unexpected result and it led to radio. Or it could be that as electromagnetic waves were better understood, we extrapolated that a range of frequencies, that we now call radio waves, existed and went looking for them.

The invisible is not just about science. It also involves things like being able to identify and question the assumptions behind what we do. To see what has become so ingrained in our world-view that it is invisible.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- The term "trained mind" is a bit odd to me. I'm not sure what would be a better term, however. I guess I need to define what is meant by it.

62 SELF-DIRECTED LEARNER*

... *insert context statement*



There are no formal schools that can teach you exactly what you need to know to make your contribution. Yours is a unique body of experiences and you require a unique set of knowledge.

The idea behind this isn't that school is a bad thing, but that there will come a time when a structured curriculum will get in your way. Getting endless degrees is probably not a great way to find out what you need to know. You need to become a skilled self-directed learner to get beyond the accepted solutions and innovate.

Therefore:

Take control of your learning.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- see "No Degree Required" (7:69)

63 SELF DISCIPLINE*

. . . **insert context statement**



Insert problem statement.

I'm not sure if this just about having self-discipline or if I also need to talk about what Fuller referred to as his self disciplines. They go beyond what is typically thought of as self discipline.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

64 TIME TO THINK

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

65 INTERRUPTABLE LINE OF THOUGHT*

. . . building an [ACCURATE PERSONAL UNIVERSE \(50\)](#) and solving complex problems requires a great deal of thought and learning. This pattern helps fit those processes into a busy life.



With the many demands that are placed on us, it is very difficult to find time to think about anything for very long.

In the short story _____ by Kurt Vonnegut, society has become so determined that no one should feel inferior that they force equality on everyone. Dancers who are too graceful wear heavy sandbags to weight them down, and intelligent people wear devices that startle them periodically with a loud noise so that any thoughts they might be having will be driven out of their minds.

While it is not forced on us, we live in a world that is full of interruptions. We are constantly interrupted by other people, the media or just everyday life, and it is very difficult to find large expanses of quiet time to think. As a result, we need to find ways to keep a line of thought going even when it is interrupted.

The key to doing that is to record your thoughts in such a way that it is quick and easy to answer the question "now, where was I?" when your next opportunity to think comes around. I use a notebook, but there are certainly other ways including voice recording, computer notes, or even drawings. The important thing is for you to find the technique that works for you and use it so you don't waste time going over the same old territory every time you sit down to think.

When your intention is to keep a line of thought going, the things you record may be different than other notes you might keep. Usually, we write down the results of our thinking, our conclusions, but my notebooks are full of questions, conjectures, hypotheses and half-thoughts. They record my thought processes and only small parts are devoted to my conclusions. That way, I am able to pick up where I was simply by reading a few pages back.

Therefore:

Find techniques that will allow you to keep a line of thought going even when you have long interruptions between times you can focus on it.



Record insights about your line of thought as you have them -- [CONVENIENT NOTEBOOK \(115\)](#); and begin to place them into a loose knowledge structure as soon as you can -- [PATTERN LANGUAGE \(112\)](#) . . .

Counter Arguments:

Note Pad:

66 ELIMINATING DISTRACTIONS

... **insert context statement**



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

67 A PLACE TO THINK

... **insert context statement.**



We each have particular

Insert discussion text.

Therefore:

Insert solution statement.



You may want to make it isolated from sound and visual distraction, both to cut down on distractions -- [ELIMINATING DISTRACTIONS \(61\)](#), and to make it possible for your to make noise -- [THINKING OUT LOUD \(146\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

- There is a section in "How to Think Like Leonardo da Vinci" about this (page 140-141).
- You might want to include space for a [HOME LABORATORY \(63\)](#).

68 HOME LABORATORY

. . . in putting together [A PLACE TO THINK \(57\)](#), you might want to have a special place set aside for making discoveries.



Insert problem statement.

- ◆ Talked about by Richard Feynman as something he and his friends had as a kid. It can be as simple or complex as you want to make it, but it needs to be a place where experiments can be carried out for any number of sciences.
- ◆ A part of having a lab would be having a lab notebook where you could describe the experiments you set up and the results you get. I'm not sure it's the same as [SKETCH \(107\)](#).
- ◆ Feynman made a point to say that he never really did experiments in his lab,; he just tinkered with things.
- ◆ A laboratory is simply a place designed to perform experiments, and experiments are carefully planned experiences designed to tease out more reliable interpretations of these experiences. If you are performing physical experiments (i.e. physics), you need a physical laboratory, but a lab can really be anywhere, even in your mind. I think of the movie *Patch Adams* and how Patch experimented with the reactions of people on the street. I'm also reminded on "mind experiments" (I think I've heard them called) where you imagine the results of an action.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

69 EXTENDED LIBRARY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

70 MULTIPLE INTELLIGENCES

... *insert context statement*



We all have some ability in each of multiple intelligences, but we tend to focus on the ones we're good at and the others are neglected.

- ◆ We tend to do more of what we're good at, but it makes more sense to work harder on the aspects of our minds that don't come naturally to us.
- ◆ Look into the 25 different subintelligences that Howard Gardner ("Frames of Mind") found.
- ◆ The idea of multiple intelligences is built into this pattern language in that it includes skill that incorporate all the intelligences. See Appendix A for a breakdown of patterns according to Multiple Intelligences.
- ◆ The seven main intelligences are: 1) Logical-Mathematical, 2) Verbal-Linguistic, 3) Spatial-Mechanical, 4) Musical, 5) Bodily-Kinesthetic, 6) Intropersonal-Social, and 7) Intrapersonal (emotional, self-knowledge).
- ◆ When something comes easily to someone, they may not see a need for changing it. I've always thought that instructional books should be written by people for whom it was difficult to learn the topic.

Therefore:

Strive to work on all your intelligences. Work on skills that are difficult for you.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

71 LANGUAGE AND CULTURE

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

72 LEARNING STYLE

. . . because we each have our own mix of strong and weak intelligences -- [MULTIPLE INTELLIGENCES \(60\)](#), we prefer to learn in slightly different ways. This pattern looks at the different ways that we learn.



If you're having trouble learning, it may be that you're using the wrong method of learning.

Information can take many forms and you can probably understand and remember information best when it is presented in the way you learn best. For example

- ◆ reading VS listening to someone reading out loud
- ◆ doing something VS watching something demonstrated
- ◆ writing about something VS building a model of it
- ◆ writing letters VS discussing something face-to-face
- ◆ describing something artistically VS writing an analysis of it

There are many ways to learn and how effective those methods are has a lot to do with the subject being learned. If you are trying to learn to drive a car, you can read all about it all you want, but you're still going to have problems driving once you get in a car. By the same token, you may have a great deal of trouble understanding quantum physics if you only learn by hands-on manipulation of objects.

I think a big part of learning style is motivational. What types of activities do you find fun? It may be that this is just a clue to your innate style. We tend to love the things we are good at.

Therefore:

Start learning things according to your preferred learning style.



To develop other intelligences -- [MULTIPLE INTELLIGENCES \(60\)](#), you may want to expand on your learning style and try new ways of bringing in information. . . .

Footnotes:

Counter Arguments:

Note Pad:

73 CONSCIOUS PHILOSOPHY

... **insert context statement**



There are fundamental questions about Universe that are the realm of philosophy. To operate in this world we have to have some opinion about these philosophies. If you have never examined your opinions or don't know what they are, you cannot build a stable personal Universe.

Our personal philosophy is at the heart of who we are as individuals. It influences the decisions we make, the attitudes we have, and the kind of person we are. Formalized philosophy looks at the big questions that are difficult or impossible to prove decisively, such as "is there a God?" or "does objective Universe exist?". On a personal level, our individual philosophies consist of the answers, no matter how tentative, that we've given to these questions.

If we haven't looked at what those answers are for ourselves, then we are operating according to our default philosophy: what others have told us we should believe. In a very real way, we have let others decide what we think.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- What are the questions that formal philosophy looks at?

74 TESTED ASSUMPTIONS

. . . If you are alert -- [ACTIVE MIND \(102\)](#), you will begin to identify some of the assumptions that form the core of your understanding. This pattern discusses how we can test an assumption once we identify it.



By definition, we treat assumptions as truth without questioning them, but assumptions can be wrong just like any knowledge and they need to be tested.

An assumption is a little door in our mind that will remain closed unless we make a point of opening it and examining the facts in the room beyond. Assumptions become assumptions because somewhere along the line we became convinced that they were accurate and we stopped even looking at them.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

75 EMOTIONAL LITERACY

. . . **insert context statement**



Emotions are part of being human, but many of us are not very good at dealing with them constructively.

Insert discussion text.

Therefore:

Therefore, strive to continually improve your understanding of your and other's emotions.



Try to use your emotions as a tool to listen to your intuition -- [AUDIBLE INTUITION \(67\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

76 PERSPECTIVE

... *insert context statement*



It can be very helpful to climb a mountain if you want to understand the lay of the land below.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

77 AUDIBLE INTUITION

... *insert context statement*



Often, we know what we need to do, but we don't listen to our inner voice.

- ◆ The inner voice makes itself heard most often in the form of an emotion. There is a danger, if you are the kind of person who avoids emotion, in blocking that voice by blocking emotion.
- ◆ We most often ignore our inner voice when it's telling us something we don't want to hear. Being honest with ourselves is a big part of hearing our intuition.
- ◆ There are a number of different definitions of intuition, ranging from mundane to mystical. I think it is useful to differentiate between the inner voice itself and the source of the inner voice. I don't know the source or even the nature of the information being voiced. It may be that there are many sources, from guardian angels, the devil, subconscious understanding, insecurity, a channel to memories of past lives, or even a psychic connection with Univverse. I'm not necessarily saying that I think the source of intuition is any of these things, but it really doesn't matter. From a practical viewpoint, where it comes from is unimportant. It takes the form of thought, and it needs to be treated critically like any other source of information. Like any information, it needs to be tested; it should not be assumed to be true.
- ◆ Actually, I want to say that intuition should be treated as a higher-quality source of information, but I'm concerned that some inner-dialog comes from insecurity and should be ignored as much as possible. So how do you differentiate? Perhaps it all needs to be tested for the "ring of truth."
- ◆ Intuition can help us in many ways. It can help us identify a conflict in our thinking, or in what others are telling us.

Therefore:

Take time to discover your inner voice and learn to listen to it.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

78 SERVICE TO HUMANITY

... **insert context statement**



Many people have jobs that do nothing to directly contribute physically or emotionally to the support of human life, but people want to feel needed and we want to feel like what we are doing with our lives matters.

It seems to me that people are happiest -- once their basic needs are met -- in the service of something larger than themselves. Since those of us in industrialized nations have all our basic needs met, we have the greatest opportunity to make beneficial changes in the world. And we are a small number of people. It may seem like there are many of us because we are all together, but in the world, the people who have as much advantage as us is a very small percentage.

It can be as simple as raising your kids (not really simple, but simple to choose as a task) or finding a cure to cancer.

For some the tasks they will choose will involve working directly with people -- [ONE ON ONE CONTACT \(131\)](#), and for others it will involve working behind the scenes -- [BETTER TOOLS \(132\)](#). For most, it will involve a balance of the two.

Therefore:

Look for ways to serve your fellow human beings and give yourself freely to the tasks you choose.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This may need to be more general. Look more at logotherapy and Victor Frankle's *Man's Search For Meaning*.

Critical Path, p. 124-125 (item 8) -- quote from RBF about serving all humanity and not just "my dependents, myself, my country, my team."

79 REGENERATIVE THOUGHT

... *insert context statement*



Insert problem statement.

A regenerative thought is one that creates energy in the thinker. It is akin to "positive thinking" but I really want to avoid that phrase because I think the common understanding of it is covered in Polyannaesque Viewpoint. I think of regenerative thought like Dewey talked about an educational experience: a regenerative thought leads to further thought. It does not close down the process of thinking. It spurs new questions and new ideas and is potentially boundless.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

80 POLLYANNAESQUE VIEWPOINT

... *insert context statement*



We create impressions of other people by interpreting their actions. Unfortunately, our interpretations can have more to do with ourselves than the other person.

◆ This is also about assumptions. You might as well assume the best.

Therefore:

Be aware when you are interpreting and assume best possible reasons for someone's actions, unless further actions contradict that interpretation.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

81 SUPPORT FROM OTHERS

. . . **insert context statement**



Insert problem statement.

It's important to surround yourself with people who will support the things you are trying to do. The more difficult the task, the more important this is. Friends and family who undermine your efforts will make things much more difficult for you.

It's important to note that "support" is not just simple encouragement, but it includes constructive criticism of your work. You need to listen to objections and decide if they have merit. You can't go forward blindly and surround yourself with "yes men".

Therefore:

Surround yourself with people who will support you in what you are trying to accomplish.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

82 ACHIEVEMENT ROLE MODELS

. . . *insert context statement*



The achievements of others can be a strong inspirational and motivational force in our lives.

In the context of comprehensive thinking, it can be good know about other comprehensive thinkers and what their diligence achieved.

Therefore:

Look for people you can admire and respect and try to learn what you can from their example. If they are still living, find a way to talk to them about how they have affected you.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

83 BEHAVIORAL ROLE MODEL

... **insert context statement**



We get a lot of information about how to act from other people.

- ◆ We can choose who we would like to emulate and that choice can bring about change.
- ◆ People talk about role models as though they are all positive, but we can learn bad habits from people as well as good. That doesn't mean that we are stuck with those habits. By choosing our role models, we can reenforce ways we want to be and reject behavior we don't want to emulate.
- ◆ Along the same lines, we can learn what we don't want to be like from a role model, but we have to be conscious of this for it to work well. We can't just do the opposite of what we don't want, we have to rethink it in a way that ensures that we're not trading it for an equally bad habit. (see Education and Experience, by John Dewey)
- ◆ You can create your own role models as well. For example, when I want to lose weight, I create a role model I call "Lean Jim," and I ask myself "what would lean Jim in this situation?" My role model is simply an embodiment of what I know about eating healthily and exercising.
- ◆ Another popular example of this is WWJD (What Would Jesus Do?).

Therefore:

Make a conscious choice about who you emulate.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

84 IMAGINATION

... *insert context statement.*



Insert problem statement.

- ◆ The ability to imagine is what moves us forward. To plan we need to be able to visualize a future that doesn't exist. this is a key theme in "Origins of Knowledge and Imagination."
- ◆ I'm not sure if "Imagination" and "Visualization" are similar enough to be part of the same pattern. There may need to be a larger idea that is the name of the pattern to include both.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

85 CURIOSITY

... **insert context statement**



There are things we don't understand going on around us all the time, but many of us stopped asking questions a long time ago.

- ◆ The desire to understand is often referred to as a "child-like curiosity." Why is this limited to children? Do we think that we know something after we learn it's name? Yes -- [LEVELS OF KNOWING \(89\)](#)
- ◆ We all know what it's like to be curious. We were all children once.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- Exercise: "I don't know" as a goal. Look around you or pick up any object and start asking questions about it. If you know the answer, then keep going until you find a loose end in your knowledge. If you're like most people, it won't take long to get to "I don't know." The next step, of course, is to find out the answer.
- a.k.a. Quest for Understanding, Truth & Beauty

86 BALANCED LIFE

... **insert context statement**



Thinking comprehensively requires that we have a balanced intellectual life, but there is more to life than thought.

- ◆ ties into multiple intelligences: It is better if you use all your intelligences.
- ◆ To do our best we need to maintain our physical health as well as our intellectual health. In addition, we need healthy spiritual, social and emotional ties. Related to the concept in "7 Habits" of "sharpening the saw". Overall, though, I think it's a call for moderation and an avoidance of extreme lifestyle choices as well as extreme points of view -- i.e. taking a simplified, but inaccurate point of view.
- ◆ also related to avoiding overspecialization.
- ◆ The idea of balance is one that should be relected in these patterns as a whole. Solving problems isn't just pure thought. You must also build your ideas, test them, live with them, and you need to consider the ethical or spiritual aspects of an idea -- how it will affect people.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- a.k.a. Well-Rounded Lifestyle

87 FLOW

... **insert context statement.**



Insert problem statement.

◆ The books on flow are probably full of ideas & patterns related to this.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

88 FUNDAMENTAL MYSTERY

... **insert context statement**



In this scientific age where there seems to be an answer for everything, we have lost the sense that there are things we may never understand.

- ◆ Science can't tell us why things work the way they do; it can only describe how things work. This knowledge allows us to harness the principles of Universe, but it doesn't diminish the mystery of that Universe.

Therefore:

From time to time, ask yourself the unknowable questions and listen carefully to how you answer them. Try to answer them, not by what you've been told to believe, but by what your experiences and intuition tell you.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This would lead to a pattern about faith.

89 LEARNING AS PROBLEM SOLVING

. . . **insert context statement**



You never have all the information you need when dealing with a problem; if you did, it wouldn't be a problem.

Not all problems can be solved through learning, but it is a powerful tool that is necessary if you want to avoid recreating someone else's unsuccessful solution. Solving a problem often requires the discovery of new principles or a significant insight into the problem. These go beyond simple learning, but learning is often what leads to the required mental leaps.

◆ (see 9:47)

Therefore:

Insert solution statement.



Develop your resources for learning new things as you need to -- [EXTENDED LIBRARY \(59\)](#) and try to look at problems as opportunities to learn something new . . .

Footnotes:

Counter Arguments:

Note Pad:

90 EDUCATIONAL EXPERIENCE

... **insert context statement**



Many of our experiences with learning — whether in school, on the job, or from others — teach us that we don't really like learning.

- ◆ According to Dewey, and educational experience is any experience that leads to further educational experiences. If an experience squashes curiosity it is not educational.
- ◆ Tied to this is the idea that we over-generalize. If we are careful not to learn too much from an experience — [JUST ENOUGH LEARNING \(98\)](#), then we can turn any experience into an educational one.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

91 LEARNING BY UNDERSTANDING

... **insert context statement**



Memorizing something is not the same as learning it.

This is based on the quote from Richard Feynman's book; something like "Most people don't learn by understanding. They learn by some other way, by rote or something. Their knowledge is so fragile."

When I was going to school, there was very little emphasis on understanding a topic in any kind of deep way.¹ I was expected to simply remember what was told to me, either in a lecture or in my books, and that was called learning.

You might choose to call that a form of learning, but really, it is simply memorizing. And most of what I was told in school wasn't even very well memorized. I forgot most of it soon after the test.

Memory is very important to learning; we could learn anything without it, but learning requires that we take what we've been told and integrate it with the rest of our knowledge. We need to connect it to other knowledge and experience, and we need to do the same things with information we're told that we do with direct experience: decide how much we trust it, check it against what we already know, and look for inconsistencies, etc.

Matt talked to me about how he learns something new. He approaches the subject from as many directions as possible, reading multiple sources about it and building his knowledge through repetition and making connections. I think one interesting point is that by reading multiple sources, he gets different perspectives, each of which may connect into his current knowledge a different way. For example, if he's learning about a new airplane, he might read the military's description of it which might tap into his knowledge of air battle strategy. Another article might describe the engines which might tap into his engineering knowledge. Another article might emphasize how this design came to be from a historical perspective. Each of these perspectives creates hooks into his existing knowledge and makes the new information more integrated.

Therefore:

Insert solution statement.



Insert posttext statement. ...

1. The one exception to this statement was Mr. Bernard's class where we did all kinds of multi-media projects that were intended, I think, to bring about a deeper understanding. Thanks for 3 great years Mr. B!

Counter Arguments:

Note Pad:

- Maybe the name should be "Learning by Integration" since what you're trying to do is integrate the new knowledge into your total understanding of Universe.
- I think it's the wrong approach to describe the education system as not providing understanding to its students. A school is in a difficult position in that it has to teach large numbers of children the best way it can. Understanding something requires integrating information into the student's specific body of knowledge, and it is the responsibility of the student to do that work. The one thing I might say about schools is that the process of what it takes to understand something is not well-taught. I don't remember any study skills lessons at all when I was in school. In addition, there could probably be better tools for helping students understand, but perhaps they still need to be invented.
- I think the US education's emphasis on "retention levels" tells of a mind-set toward memorization.

92 RETHINKING

... **insert context statement**



Insert problem statement.

"Mankind likes to think in terms of extreme opposites. It is given to formulating its beliefs in terms of *Either-Ors*, between which it recognizes no intermediate possibilities. When forced to recognize that the extremes cannot be acted upon, it is still inclined to hold that they are all right in theory but that when it comes to practical matters, circumstances compel us to compromise."
(John Dewey, *Experience and Education*)

When something isn't working, such as the educational system in the case of Dewey's quote, we tend to want to reject it completely and do the opposite of whatever it is. This is not a good strategy. We need to take the time to rethink the problem from the beginning.

- ◆ running through what you know is a great integrative technique -- [THINKING OUT LOUD \(146\)](#).
- ◆ Keeping a written record of your thinking -- [CONVENIENT NOTEBOOK \(110\)](#) -- is useful when it comes to going through it again. Often reading through old notes will spark all kinds of new thought. It's an especially good way to get the mental juices flowing when you aren't quite in the mood.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

93 TIME TO ABSORB NEW KNOWLEDGE

. . . The process of learning can be uncomfortable and difficult. This pattern explores what we need to do to minimize the physical effects of learning.



Learning is the result of physical changes in our brain, and the more extensive the changes, the more time is needed for reconstruction.

When we are learning new things, we will often get sleepy. Often we think it must be because the subject is boring, but that's not the reason. We must give our brains time to absorb difficult new information and knowledge. Sometime that might mean taking a short break. Other times, you will need several hours of sleep. This is a natural response to increased use of the brain, and will diminish as your mind becomes more resilient.

Taking a break doesn't mean that you have to stop learning altogether. You can do things to help the process like think through ideas out loud or perhaps do things that a different part of your brain like building a model.

There is a discussion of this in "How to Think Like Leonardo da Vinci" page 158- He refers to it as "incubation".

There are probably ways that we can make this process easier: minerals or vitamins that we can take or exercises we can do.

Therefore:

Be gentle with yourself, and give yourself time to assimilate new material.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- When I was first learning Fuller's ideas, they were so foreign to me that I had to take frequent

breaks, often after just a paragraph or two.

94 TEACHING TO LEARN

. . . *Teaching forces us to think verbally which can give us new insights into old ideas* -- [RETHINKING \(82\)](#).
This pattern explores how teaching and thinking are related.



As children, we are told that the teacher is an expert and the rest of us are students, but we are all teachers and we are all students.

The great physicist Richard Feynman taught college-level physics all his life because he felt that the process of teaching brought him insights into his work.

Putting yourself in the position of a novice so you can figure out to explain something to another person is a very powerful tool and can facilitate thinking.

You don't need to be an expert to teach on a subject. You can start out a discussion with "let me tell you what I know about this..." and that is perfectly valid.

Therefore:

When you are having a particularly difficult time understanding something, make an attempt to teach what you know to someone else.



Teaching can take the form of writing -- [WRITING TO LEARN \(90\)](#), [CONVENIENT NOTEBOOK \(115\)](#), *or talking out loud to someone else* -- [THINKING OUT LOUD \(\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

95 WRITING TO LEARN

... *insert context statement*



Insert problem statement.

There is evidence that the act of writing can help us organize our thinking in a way that no other activity does. Writing isn't limited to English class or fiction; you can write about any subject and gain insight about it.

Ideas and knowledge are generally not stored in our minds verbally. Instead we store images or other structures. Translating them into words can be a real challenge and can highlight problems with our internal representation.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

96 TEMPORARY SPECIALIST

... *insert context statement*



Sometimes you will need to dive deep into an area of knowledge.

A comprehensivist tries to keep the widest possible view of Universe, and yet there are practical matters that can only be dealt with by looking at the details. If you want to write a computer application that will facilitate the distribution of food around the world, you will need to learn how to use a computer and all the minutia that comes with computer programming. It is very possible, however to do that while always keeping the larger context in mind.

Therefore:

Be aware that specialized knowledge is important and is necessary to being effective, but continue to remind yourself of the comprehensive nature of your goals and remember to always try to fit what you are learning into the largest context you can.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

97 KNOWLEDGE AS HYPOTHESIS**

. . . to refine your Personal Universe -- [ACCURATE PERSONAL UNIVERSE \(55\)](#), you need to maintain an open mind - [- OPEN MIND \(83\)](#). This pattern looks at how to keep your knowledge flexible so you can integrate new information more easily.



When we decide that we "know" something, we stop thinking about it and start defending it.

What we call knowledge is really just our best guess at what is true. It's a set of hypotheses that interconnect to create a theory of Universe. Answers are just highly probable hypotheses.

It is your responsibility as a thinking human being to subject these hypotheses to rigorous testing. Do the ideas match your experience? Is there another idea that you think explains your experience better? What is your current assumption? Do the new ideas you encounter work better than your current assumptions?

We take great comfort in what we "know." It can be very scary to put yourself in a position where you can honestly say "I don't know anything." And yet it's not that big from "x is true" to "my experience suggests that x is true." We probably do that quite a bit already, but only with certain types of knowledge. We need only apply it across the board. We don't end up having less capability; we just have a more accurate and continually fresh perspective on that capability. It is that perspective that allows us to learn more easily -- not defending what we "know." It is akin to how we saw the world as children.

Discovering what we don't know can be a fun and exciting experience. There is motivation to fill in the hole, and the fact that we recognize the hole means that what we learn is relevant to our knowledge. The realization "I don't know" can really be seen as a gift and something to treasure.

There is no room in this way of thinking for blindly defending "what you know." All new information is welcomed as a challenge to what you hold as true. You can use that challenge to grow.

Treating knowledge as a set of hypotheses is not all that difficult. It consists of admitting to yourself that what you know might be wrong, that at the very least it is probably only part of the Truth. Once this is done consciously, then "knowledge" is subjected to scrutiny as it comes up. You develop a habit of questioning what you know as you re-encounter it in daily life and/or in the process of thinking comprehensively.

Therefore:

Recognize that what you "know" is always only part of a larger story and keep an attitude of continuous learning.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- How does opinion tie into all of this? In my dictionary, they describe three words that represent subtle differences in "a belief or judgement that rests on grounds insufficient to produce certainty." The other words are "sentiment" which usually has an emotional association, and "view" which is said to be an "estimate of something, an intellectual judgement, a critical survey based on a mental examination."
- hypothesis: 1. a proposition or set of propositions set forth as an explanation for the occurrence of some specified group of phenomena, either asserted merely as a provisional conjecture to guide investigation (working hypothesis) or accepted as highly probable in the light of the established facts." Random House Dictionary
- I guess I like hypothesis because it implies an active search for Truth -- [LEVELS OF KNOWING \(89\)](#).
- This relates to p. 116 - ? in "Clear thinking": 'Mistaking Evidence for Proof'. "We must remember that in real life the existence of absolute proof leading to complete certainty is for all practical purposes impossible to attain."
- look up on NPR notes: A study found that the people who knew the least about a topic tended to overestimate their knowledge. (6:17)
- 3/6/98 -- Stereotypes are the result of lazy thinking that allows a person to dismiss another person with a "preknown." It is an excuse for someone to not get to know someone on a personal level. It is a very good example of people not basing their knowledge on experience. Stereotypes are latched on to by people who don't know and don't want to know and are passed on by the same.
- 10/24/98 -- Stereotypes are not the result of the search for Truth. They are the result of people's natural fear of the unknown which I'm starting to think is aggravated by non-comprehensive thinking.

98 ACCEPTED IGNORANCE

. . . **insert context statement.**



It's an illusion that we understand why things happen. We probably can understand what's happening enough to function in a given situation, but for us to assume that we know people's motives, what they are thinking or feeling and why they're thinking and acting the way they are, is ludicrous.

This assumption that we know leads to all kinds of problems, from jumping to conclusions to being hurt by what we imagined.

We like to feel like we understand the reasons for things. Even when there's no real evidence that there was any reason for what happened and it appears random, we look for reasons. In most cases, we just don't have enough information to know. In some of those cases, it might be possible to gather enough information to make a reasonable guess, but sometimes there's just no way to know. A random injury or death may have a reason behind it, but we're not privy to that information. Yet, we still try to come up with an explanation that is acceptable to us.

I think it's much easier to understand *what* happened than it is to know *why* it happened. Why something happens almost always involves understanding motives or it touches on chance, fate, or circumstance. It also gets quickly into the realm of philosophy and faith. Some believe that there is no coincidence (i.e. everything happens for a reason), and some believe there's nothing but chance. Most of us are probably somewhere in the middle.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- I feel like I need a pattern that makes explicit the idea that we just don't know much about any situation.
- There are two clear aspects of this: we don't know why other people do things and we don't know why things happen in a cosmic sense. I don't think the problems statement is clear on this.
- This is related to reasonable doubt in law.

99 LEVELS OF KNOWING

... **insert context statement**



Knowing what an object is called is important, but more important is understanding how the object functions or behaves.

- ◆ There is a quote by Richard Feynman about not understand other people. He talks about how his father taught him the difference between knowing the name of something and actually knowing something.
- ◆ It has to do with understand the processes associated with an object. We can call it a bird, but what does the bird do? Why does he act the way he does? Why do some birds fly around ceaselessly and other walk around on the ground? Can they really hear worms under the surface?
- ◆ It's extremely useful to have an accurate sense of how well you know something.
- ◆ People who know the least about something have inflated ideas about how much they know. [Ref. NPR story -- see] It's a bit odd, because the feeling is that the more you know about something, the more you realize how much you don't know. So you feel like you know less, when really you know more.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- a.k.a. Beyond Labels

100 HIGH QUALITY KNOWLEDGE

... *insert context statement*



All knowledge is not created equal; treating it like it is will leave us hopelessly confused.

- ◆ This pattern really has to do with reliability of sources and level of certainty associated with data.
- ◆ Everything that we "know" exists on a scale of certainty, and some of it is closer to the "certain" end of the scale.
- ◆ It should be pointed out that in the context of this book, Truth is considered to be analagous to Objective Universe. In other words, the closer knowledge can be correllated to the way Universe works, with reality, the truer it is. (This might need to be its own pattern -- a foundational one that explains the philosophical assumptions of this book.)

Therefore:

Be aware of the quality of your knowledge and be willing to modify or replace your low-grade knowledge when you encounter higher-grade knowledge that conflicts with it.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- a.k.a. Grade "A" Knowledge

101 START WITH UNIVERSE

. . . To create a [WORLD THAT WORKS \(1\)](#), we need to look at it in its context. This pattern explores how we can get a useful perspective.



This pattern is pretty convoluted and it's not clear what I am trying to get at. Fuller talked about Starting With Universe and that's why I have it, but I'm having trouble understanding where it should be. I think it may need to be part of the process part of the book.

Open-ended problems, where the limits of the problem are not well-defined, are almost impossible to solve sufficiently.

These open-ended problems are sometimes called "wicked problems" and most of the problems we face today as a species this kind of problem.

Looking at just our planet, Earth, is not enough. We need to look at ourselves from the largest perspective possible: Universe. Universe consists of everything humanity knows about "objective" Universe.

Fuller was pretty clear about what he meant by "start with Universe." It was a way to ensure that all the relevant knowledge about a problem would be included in your thinking. Literally, start by contemplating Universe and work your way to Earth with the problem in mind. Make sure you include any forces that are acting on Earth, like solar radiation or the gravitational pull from the Moon, and consider them in your analysis. To Fuller, the process of thinking was to start with Universe and eliminate irrelevancies. **That's why I think this should be moved to the process part of the book.**

Therefore:

Approach these kinds of problems from the largest concepts to the smallest, with the largest possible concept being Universe.



Narrow the scope of the problem by progressively eliminating irrelevancies -- [SCULPTED SCOPE \(139\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

- Among scientists, Universe is divided into "knowable Universe" and "visible Universe." The visible Universe is that part of Universe that we can see, but there is a large portion of Universe from which the light has not reached our planet. We can theorize that these portions of Universe exist, but we cannot observe them. From our perspective of Universe as the aggregate of human experience, both the visible and knowable Universes are relevant. With our definition of Universe, we have to include all experiences, even if they are not part of the observable Universe, and that includes all of the human ideas that have nothing to do with reality.

102 EVERYTHING CONNECTED

. . . To continue building a accurate personal Universe -- [ACCURATE PERSONAL UNIVERSE \(55\)](#), its of information need to be connected to what you already know. This pattern looks at how we integrate new knowledge and helps complete the [SPIRAL OF THINKING \(93\)](#).



Sometimes when you take something apart to see how it works, you end up with just a bunch of parts.

- ◆ Nature does not separate itself into categories. Categories are a necessary human construct since we can't apprehend everything at once. They can help us make sense of the world, but since they are not real, they can also blind us.
- ◆ "...I believe that the world is totally connected: that is to say that there are no events anywhere in the universe which are not tied to every other event in the universe." — Jacob Bronowski
- ◆ This is also a solution to the problem that we naturally subdivide our experience.
- ◆ Connections are knowledge as well. You don't just run a simple arrow from one bit of info to another; there are ideas that connect ideas. It might be a generalization, someone else's experience, or just a simple factoid that was missing from the puzzle. The Connections series seems to me to be full of fairly trivial connections, connecting ideas with factoids.
- ◆ Include argument about the limits of reductionism.
- ◆ Quote from Fuller (maybe even the problem statement): At a time when everyone is taking things apart, there is a need for people who can put things together.
- ◆ Integrating also requires the ability to rearrange one's mental model to accommodate the new information (there is a quote about this somewhere about Physics geniuses needing to be able to unlearn everything). A key to this is the ability to determine how well we know something so we know whether it can safely be thrown out if new information contradicts it -- [HIGH QUALITY KNOWLEDGE \(90\)](#).

Therefore:

Look for ways that things -- objects and ideas -- are interconnected. It is especially important to do this with your knowledge.



Look for the bigger picture to see the connections -- [PERSPECTIVE \(71\)](#). Often the interconnections will take the form of a generalization -- [GENERALIZED PRINCIPLES \(132\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

103 SPIRAL OF THINKING

... *insert context statement*



You can never solve a difficult problem on the first attempt; if you expect to, you will be disappointed.

This is true in the larger sense too, where our ancestors attempted to solve the problem and you are taking over somewhere in the middle of the cycle. I think Fuller called this process of think/create "Teleology". This might be another pattern called "Spiral of Progress".

The steps in the cycle are perspective -> Learning -> Everything Connected -> Assessment (see blue1:35).
Therefore:

Approach the solving of your problem as a cyclical process and recognize that because you are continuously learning more, the cycle takes the form of a spiral.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

104 TUNED FILTERS

... **insert context statement**



Insert problem statement.

We can tune our subconscious to look for particular patterns in the world around us.
See the tape collection I have, and *Psycho-Cybernetics*.
Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

105 FILLING IN THE GAPS

... *insert context statement.*



Insert problem statement.

- ◆ Learning as you recognize a gap in your knowledge.
- ◆ Is this the same as getting to "I don't know"? Perhaps not. Once you get there, you still need to take the next step and fill in the gap.
- ◆ Many people have the attitude that if they don't know something, they never will. Or at the very least, they lack a habit of finding out.
- ◆ People will usually learn what they have to to solve an immediate problem -- [LEARNING AS PROBLEM SOLVING \(79\)](#) -- but if there's no pressing need, it will likely go unexplored.

Therefore:

When you discover a gap in your knowledge or understanding, make a point of learning more about it, even if there's no obvious, immediate benefit to doing so.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- a.k.a. Learning in the Gaps

106 RECONCILED CONTRADICTION

. . . To refine your personal Universe -- [ACCURATE PERSONAL UNIVERSE \(55\)](#), constantly look at the information and experiences you encounter and match them against your mental model -- [ACTIVE MIND \(102\)](#). Be particularly sensitive to information that conflicts with your personal Universe -- [TUNED FILTERS \(94\)](#). This pattern discusses how to deal with contradictions that don't resolve easily.



Insert problem statement.

This is discussed in *How to Think Like Leonardo da Vinci* as the ability to hold multiple, often contradictory ideas in your mind as true. To deal with it, we can assume that the contradiction is an illusion. If there is not a faulty assumption or conclusion that needs to be adjusted, then there is a larger concept or idea that connects the two and you are simply not aware of it yet.

This can be seen as an opportunity to make a discovery that resolves the conflict. It certainly opens up questions for investigation and while that may not lead directly to an answer, just consciously posing the question can make the conflict okay.

Our Personal Universes are quite capable of holding a question in place of actual knowledge, and this question of "what connects these seemingly contradictory ideas" is enough for our minds to rest. The question also tunes our subconscious to look for the answer -- [TUNED FILTERS \(94\)](#).

There are some things that we may never understand fully -- the realm of philosophy.

Therefore:

When you encounter an apparent contradiction where both ideas appear to be valid, look for a larger idea that allows both ideas to be true. If the larger idea is not readily apparent, place a question in it's place that asks "what is the larger idea that allows both of these to be true?"



To help solidify the question in your mind, it might help to create a graphic representation of your idea - [TOOLBOX OF SYMBOLS \(108\)](#), [MIND MAP \(114\)](#). You may also want to document the concept so you can review it over time -- [CONVENIENT NOTEBOOK \(115\)](#), [RETHINKING \(87\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

107 ACTIVE MIND

. . . improving and refining the accuracy of your Personal Universe -- [ACCURATE PERSONAL UNIVERSE \(50\)](#), is not something you do once and then forget about; it is an ongoing process. This pattern helps describe how to keep your Personal Universe up-to-date.



Because we don't ever understand the whole picture, we will constantly encounter information that seems to conflict with what we know.

- ◆ This is a constant re-examining of what you know in light of new information.
- ◆ Sometimes new information just fills in the gaps -- [FILLING IN THE GAPS \(95\)](#).
- ◆ Some contradictions serve to root out bad assumptions or misinformation. The first approach is to say to yourself "perhaps one of these ideas is wrong."
- ◆ Use other skills to test the veracity of both ideas -- [HIGH QUALITY KNOWLEDGE \(90\)](#)
- ◆ If the contradiction reveals a flaw in your Personal Universe, let the faulty idea go.
- ◆ If they both appear to be true, then you may need additional information -- [RECONCILED CONTRADICTION \(96\)](#).
- ◆ Often an active mind takes the form of a curious nature.
- ◆ It seems like this goes hand in hand with learning. Do some people learn without doing this kind of reconciling? I think this is related to Feynman's statement that some people don't seem to learn by understanding; they learn by some other way, by rote or something. [LEARNING BY UNDERSTANDING \(81\)](#).
- ◆ Listen to your intuition -- [AUDIBLE INTUITION \(67\)](#) -- when you feel like something you hear doesn't sound right. That feeling is alerting you to a conflict in your knowledge. For many people, this realization or voice is something to be ignored, or even actively avoided. To someone with an active mind, it is a welcome chance to fine-tune our view of Universe.

Therefore:

Be alert to new information and experience. Use that information to test your Personal Universe by looking for inaccuracies and contradictions.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:**Note Pad:**

- I'm not really happy with the conclusion statement. There is a real joy in this, and that is not well-represented. It is closely akin to curiosity except that it adds the process of testing your current knowledge.

108 JUST ENOUGH LEARNING

. . . if something you're doing hasn't caused problems, it doesn't mean it won't in the future -- BEST PRACTICES (136); this pattern helps define how much we should learn from our experiences.



There are many opportunities to learn about the world around us, but we often end up taking experiences and overgeneralizing them, essentially learning too much. (see blue1:30)

- ◆ see "Clear thinking", pp. 113-115, 'wrong generalizations'
- ◆ This can happen the other direction -- what "Clear Thinking" calls a mind set. Just because something hasn't happened, it doesn't mean it won't
- ◆ This reminds me a bit of the "Life Strategies" book where he says that habits you have are not necessarily good for you just because nothing bad has happened. You might have driven home drunk and been fine, but another person hit a child and killed them. Does that make your actions right? Of course not. There is a way of looking at things that is not strictly results-based. In the software industry, it is called "best practices."
- ◆ This is especially true when it comes to people. Because we are dealing with so little knowledge when we deal with people, we're tempted to make quick generalizations. A single incident becomes "he always does that." It can be even worse if you know the person well because you get to the point when you stop seeing what a person is doing and you're operating on assumptions about how they will behave.
- ◆ Of course, the other extreme is not learning anything, so as the name of this pattern implies, it is a balancing act: not too much learning, not too little, but just enough learning.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

109 MULTIPLE CONCLUSIONS

. . . *this pattern helps complete [KNOWLEDGE AS HYPOTHESIS \(87\)](#) by helping us keep our knowledge flexible.*



It is very easy for us to assume that the first explanation that occurs to us about a situation is the truth. This is called "jumping to conclusions".

It takes a certain amount of effort to avoid this tendency. It helps to remind ourselves that we don't know if our conclusion is true. Like any knowledge, it's just a hypothesis. It may fit all the facts, but that's probably because we don't have very many facts to work with.

With this in mind, we can play a game: "What other conclusions fit the current evidence?" One answer is almost always "it's possible that I have completely misinterpreted the evidence."

It's a bit like setting aside part of your mind to play the part of Sherlock Holmes while the rest of your very human and emotional mind plays the part of Dr. Watson. Dr. Watson always jumps to the obvious conclusion with Holmes inevitably pointing out evidence that Watson overlooked. You may feel pretty certain that you're right, but it's good to have that part of you that questions everything.

Therefore:

Try to imagine at least two scenarios that could produce the result that you see. This will help you keep an open mind.



To help you from jumping to the worst-case scenario, try to keep an optimistic outlook -- [POLLYANNAESQUE VIEWPOINT \(75\)](#), and be aware of your emotional state so you can detect when emotions may be clouding your reasoning -- [EMOTIONAL LITERACY \(65\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

- This is intended as an antidote for jumping to conclusions.

110 ACCURATE LANGUAGE

... **insert context statement.**



The language we use and the words we choose have a significant effect on how we think, what we think, and how we act, but this is not the same as being politically correct.

- ◆ Basic pattern of General Semantics
- ◆ Would it follow, then, that if we hope to have a one-world idealized world, that we create a language that is capable of dealing with all the nuance of the many Earth languages so no cultures and ideas are lost? I think it has to do with the fact that language is a direct reflection of human experience. It is an integral part of Universe. American is a good candidate for a "world language" because it is such an absorptive language. I had also thought that there might need to be a pattern called "Everyone Bilingual" as a way of both preserving the local culture and connecting with the world culture.

Therefore:

Study the ideas of general semantics.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- a.k.a Language and Action, General Semantics

111 SUSCEPTIBLE TO PROGRESS

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

112 HEALTHY SKEPTICISM

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

113 TOOLBOX OF SYMBOLS

... *insert context statement*



Insert problem statement.

One of the problems I've had when I've tried to use visual thinking techniques such as mind mapping is that I have trouble drawing representative images for my ideas. Developing a library of symbols, or even a visual language would seem, at least, to be good practice for that.

Beyond that though, I think having developed this kind of language would help to integrate the sides of the brain and offer perspective on concepts. I could see creating compound symbols that represent something. The symbols one chooses to combine might be very different from the words you might choose to combine for the same idea.

I'm reminded of John Edwards. He claims to have a set of symbols he uses to communicate with those on the other side. Some of them are very personal to him, such as books that represent the theme of that book.

I guess this is like creating your own pictographic language. There is no reason it has to be made up from scratch, but it needs to be learned so that it becomes part of your thinking process.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I should do some reading about iconology. What is the significance of symbols in human thought and perception? Are they equivalent to generalizations?
- a.k.a. Library of Symbols, Iconographic Language

114 REFERENCE NUMBERS

... *insert context statement*



Insert problem statement.

It can be very useful to have a set of numbers that we have memorized that help us to make better sense of the world around us. For example, the author of "Mathsemantics" talks about how useful it is to know the population of the U.S.. When we see statistics that talk about something that affects 20 million Americans, we can mentally note that that is approximately 0.75% of the population.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

115 MEMORY FRAMEWORKS

... **insert context statement**



Insert problem statement.

Science has found that our memories can be much more effective and accurate if we have some kind of reference system on which to hang the things we're trying to remember. For example, there are techniques for remembering lists of things, like a grocery list, that involve imagining we are taking a walk through a familiar place and placing the items we want to remember in pre-defined locations along that path. That path would be a memory framework.

I've been interested in creating a framework to help me remember world history, but I've never quite managed it. I'm guessing it would involve memorizing some key events from each century and then using them as a reference when I hear of other events from that time.

I think memory frameworks can only be made more robust if you establish a [TOOLBOX OF SYMBOLS \(103\)](#).

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

116 BRAINSTORM

... **insert context statement**



Insert problem statement.

Brainstorming is good for breaking out of old thinking patterns, but it should be used carefully. So many endeavors require "new" ideas and it is more important that the ideas work rather than be new. With this in mind, I suggest a slightly different approach to brainstorming:

- ◆ Brainstorm Connections — look for ways that two ideas you are struggling with are related.
- ◆ Learn Together — Other perspectives can really help all of you to understand an idea better. A brainstorm can act like an interconnection of several minds, tapping into the experiences of others to create a more comprehensive understanding.
- ◆ Broaden the Scope — together think inferentially as much as possible to move toward higher-order generalizations.

The same rules apply. Since everyone's experience is valid, there is no room for criticism. Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

117 SKETCH

. . . to use both sides of your brain, you will need to focus your mind on activities that you might not always use.



Insert problem statement.

- ◆ Using drawing as a technique for thinking.
- ◆ Not all thought is verbal. In fact, we largely think in images. Translating those images directly to paper can be very useful.
- ◆ Also, there are many ideas out in the world that have taken the form of objects, and often a sketch of that object is much more useful than a verbal description of it.
- ◆ I think sketches are more useful than Photographs in many instances, because sketching requires that the brain be engaged. It is a form of thinking.
- ◆ The act of drawing something requires that you see much more of it. It can no longer be categorized or seen as an icon.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- There is a book on that I've been wanting to get called *Thinking With A Pencil* by Henning Nelms. On Amazon.com a reader mentioned another book along these lines called *Rapid Viz* by Kurt Hanks.
- Look at *Drawing on Both Sides of the Brain* and see what insights it has to offer.
- You might want to look at *The Artist's Way* by the same author.

- In the film *Amelie*, one of the characters paints a copy of (I think Monet) masterpiece over and over throughout his life. For him, the painting embodies the life around him. His attempts to understand the people in the painting relates to his understanding off the people he knows and to their understanding on themselves.
- Hypothesis: because art is a human endeavor, it reflects the personal universe of both the artist and the observer. It is a window into our assumptions, experiences, values, and expectations.

118 COMPUTER MODEL

... **insert context statement.**



Insert problem statement.

- ◆ Fuller felt that computer models would add a certain amount of objectivity to the process of making large changes. Computers wouldn't have to cling to outdated ideas, and if they are programmed correctly, they will give an accurate result to fairly complex ideas.
- ◆ The Santa Fe Institute has found that computer models of complex systems is quite useful.
- ◆ Computers help us deal with large amounts of data, and when you're trying to think comprehensively, you are starting with large amounts of data.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

119 MIND MAP

... **insert context statement**



Insert problem statement.

◆ This is a technique for writing ideas that is supposed to better mirror how our minds work.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

120 CONVENIENT NOTEBOOK

... *insert context statement*



Our minds will come up with ideas and new thoughts at the most inconvenient times. Often these ideas are lost because we don't have any way to record them.

◆ Keeping a collection of ideas in a notebook helps in rethinking those ideas -- [RETHINKING \(82\)](#).

Therefore:

Find a notebook that works well for your lifestyle and keep it with you at all times.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

121 SLIP FILE

... **insert context statement.**



Insert problem statement.

The idea behind a slip file is simple. It is a variation of using index cards to do research. You put discrete information on an index card and then arrange the index cards into a coherent whole.

You can use index cards if you would like, but I found that I was much more inclined to write down everything that popped into my head if I used slips of paper instead of index cards. Index cards are relatively expensive, but slips of paper are perhaps harder to sort and flip through.

My system was to use 4 x 5.5 inch slips of paper rather than 4 x 6 index cards because that allowed me to get four slips out of a single 8.5 x 11 sheet of paper. This makes the system very inexpensive. You can buy a ream for about \$5, have it cut (3 cuts @ \$.25 per cut = \$.75) and have 2000 slips for very little money. You can still use boxes and file sdesigned for 4 x 6 cards, so you don't lose much.

Something I never did but might work best would be make unlined 4 x 5.5 inch index cards the way I describe above from cardstock. It would still be relatively cheap, but it would have the weight to stand up.

Disadvantages of the system include: 1) it's hard to carry around, 2) I didn't enjoy sorting them, which is a key aspect of this system, 3) the slips are difficult to cross-reference, 4) they're no easy to flip through and get an overview of your previous thinking, 5) they're not convenient to spread out at a restaurant table.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- pick up quote from "Lola" about the author's use of this system

Add my own experiences

122 PATTERN LANGUAGE

... **insert context statement**



Insert problem statement.

The structure of a pattern language has many of the features that I was trying to incorporate into what I was calling a "knowledge structure." To go beyond just presenting information, you need to start discussing how parts of an idea are interconnected. Ideally, the concepts would be approached from the top down from most comprehensive to least comprehensive (large patterns to small patterns), they would be easily summarized, though if greater detail were desired, it would be easy to get into the details of the idea. And links between ideas would be treated as knowledge in their own right. Examples would be presented that would help a person begin connecting the ideas to their own body of experiences, and the person would understand how to use the information after they had read the information. A pattern language does all of these things.

I hesitate to separate "patterns" from a "pattern language" because the interconnections are so important. If you simply summarize an idea, it is just that, an idea. It only becomes a pattern when you begin to connect it into the larger fabric of a pattern language.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

123 EXTENSIVE CROSS REFERENCING

... **insert context statement.**



Insert problem statement.

◆ Cross-references = connections = integration

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

124 WRITTEN INDEX

... **insert context statement**



Insert problem statement.

There is a whole discipline to writing an index.

Indexes are tools that we often take for granted. They are simply a way to make it easier to look up some bit of information in a larger book. But a well-written index is much more than a list of words that occur in a text. It attempts to anticipate how readers will approach a particular text. It tries to connect the concepts in the text with the larger Universe of knowledge in a way that makes it more accessible to the reader.

Indexes have become more popular than ever with the introduction of the Web. Finding better ways to index all the information on the web is big business.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

125 CHRONOFILE

... *insert context statement*



We can often remember when we thought of an idea, based on events that were going on at the same time, better than we can remember abstract ways of filing information.

- ◆ This files things according to when they were created. As a result, it uses one of the four dimensions to organize information.
- ◆ This kind of arrangement also allows you to see the progression of an idea over time. We rarely understand a complicated idea all at once. It usually takes time as we piece together the information that we need to make it relevant to our experience.

Therefore:

File ideas in a chronological order if that seems to work better for you.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- R. Buckminster Fuller's chosen technique. Look up discussions about why he chose it.
- *Critical Path*, p. 124 (item 6) quote...

126 INVENTORY

. . . to think comprehensively, you want to make sure you are aware of all the issues and all the tools available to you. This pattern helps explain how to start doing that.



The human mind can remember only a few things at a time.

- ◆ Essentially we're talking about making lists. Are there other variations of a list that need to be discussed?

Therefore:

Create inventories to help you keep track of large amounts of information.



If your inventory is a list of tasks, the next step is to put them in order -- [CRITICAL PATH \(141\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

127 SENSE OF A BETTER WORLD

... **insert context statement**



Insert problem statement.

To start, you don't really need a clear [VISION OF THE FUTURE \(119\)](#). You get that eventually, at least in a small area of the world, but that's just before (or at about the same time) that you are able to identify [SOMETHING THAT NEEDS DOING \(135\)](#). An overall sense that 1) the world could be better and 2) that I could be the one who makes it better, are two fundamental ideas that can be motivating to those who don't naturally have that sense.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I've seen this idea written somewhere. Something about the "inventor's personality"?

128 POWER TO AFFECT CHANGE

. . . **insert context statement**



In the face of the vast resources commanded by big businesses and governments it is sometimes difficult to understand how we could possibly make a difference.

Buckminster Fuller attempted to "discover what -- if anything -- a healthy young male human being of average size, experience, and capability with an economically dependent wife and newborn child, starting without capital or any kind of wealth, cash savings, account monies, credit or University degree, could effectively do that could not be done by great nations or great private enterprise to lastingly improve the physical protection and support of all human lives, at the same time removing undesirable restraints and improving individual initiatives of any and all humans aboard our planet Earth." -- RBF, *Critical Path*, p.124.

I want to get across that everyone has the power to make a difference.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- *Critical Path*, p.124 (item 7)

129 VISION OF THE FUTURE

... **insert context statement**



If you don't have some idea of the future you want to create, you cannot build it.

This is part of the process that Fuller called Teleology. You have a vision of the future, you build it, it becomes part of yours and other's realities, and then you create the next vision of the future.

Your idea doesn't have to be comprehensive to be of use. Sometimes the best we can muster is a vision of the next hour and a half, and that's fine. In many cases, longer-term visions of the future can be a source of failure. Alcoholics Anonymous and other twelve-step programs talk about "taking it one day at a time" because looking at the longer visions can be overwhelming. It's too daunting so we take it in smaller bits. (Manageable Tasks (??)).

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

130 YOUR UNIQUE CONTRIBUTION

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I talk about finding your unique contribution in a number of places, though I'm not sure that it is a pattern. I guess the idea is that you have an opportunity to find something that needs doing that you are well-suited to doing, either because of your experience and knowledge, or just that you find it interesting. This has a lot to do with [SOMETHING THAT NEEDS DOING \(135\)](#) in that you're trying to find some way to contribute. I think there is an automatic tendency to find something that is at least somewhat unique to you just because your unique experiences and interests direct where you look. My intuition right now says this pattern should merge with [SOMETHING THAT NEEDS DOING \(135\)](#).
- I don't want to imply that that there is necessarily something that you are *meant* to do. I don't think we can know if there is some kind of cosmic mandate that we do something with our time on this planet, but if there is, looking for it in this way may be as good a way to do it as any.

131 RESPONSE-ABLE MIND

... **insert context statement**



Insert problem statement.

If our personal Universe is the aggregate of all our experiences, it would seem like there is another part of the equation that is our personality, our mind that is the tool we use to build our personal Universe. If our Universe is the database, this other thing is our interface with objective Universe.

I think this is essentially the distinction that Fuller makes between mind and brain. Our personal Universe is a construct of our brain and our mind is separate from it, able to look it from a distance, able to discover inaccuracies and make corrections, able to derive generalizations. The results of mind then become part of our personal Universe. This is a kind of internal teleology.

It is part of us that makes us -- as Covey coined it in *Seven Habits of Highly Effective People* -- "response-able". Victor Frankle talked about it in *Man's Search for Meaning*. It is the separation we have between stimulus and reaction.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

- In *Emotional Intelligence* the author talks about instances when this ability to intervene is short-circuited in the brain.

Note Pad:

132 COMPREHENSIVE THINKING

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

1. I use "comprehensive thinking" to refer to what Fuller called "comprehensive anticipatory design science" and what others shorten to "design science". In looking at what Fuller meant by "comprehensive anticipatory design science", I realized that a rational argument could be made for shortening the phrase as I have.

Besides being easier to say, comprehensive thinking encompasses the other parts of Fuller's phrase. It can be easily stated that comprehensive thinking would, of course, be anticipatory: if you don't anticipate, then your thinking simply is not comprehensive.

The act of designing is a form of thinking, specifically problem-solving, so of course, comprehensive thinking would involve design. The other meaning of design, as a noun -- an object or plan that has been designed -- is also a form of thought. In a sense, it is thought solidified into an artifact, and this can also be encompassed in comprehensive thinking.

Science is a system of thinking designed to improve our chances of being correct in our conclusions. The methods of science fit nicely into comprehensive thinking. As for the conclusions of science, they are also included as a reliable source of knowledge.

Beyond Fuller's phrase, I've found that "comprehensive thinking" is a concept that can encompass everything we know about what it means to know something. In other words, the patterns of comprehensive thinking represent everything we know about discovering, learning, thinking, knowing, building, and designing our Universe.

Counter Arguments:

- In the *World Design Science Decade* documents, there is a section called "Comprehensive Thinking" which would seem to validate the use of the phrase, but it is presented as a component of Design Science, so I'm not so sure that both concepts aren't needed.

Note Pad:

133 TAKING THE DESIGN INITIATIVE

... **insert context statement**



Insert problem statement.

"Taking the initiative means that the design-scientist — like the medical scientist — will no longer operate on a basis of having to be retained by a client to carry out the client's primary design concepts." (RBF, *Utopia or Oblivion*, ch. 10)

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- This might also mean that to be optimally effective, you can't just choose an existing organization to sign up with. I'm not sure about this, though.

134 WORK WITH EVOLUTION

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

135 TRIMTAB

... *insert context statement*



As individuals, we don't have the resources to create change the same way that large corporations or governments do.

Insert discussion text.

Therefore:

Look for things you can do that will act as a catalyst for further change



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

136 ONE ON ONE CONTACT

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

137 BETTER TOOLS

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

138 REFORM THE ENVIRONMENT

... **insert context statement**



Insert problem statement.

This pattern is based on Fuller's assertion that it is better to change the environment, bringing about spontaneous changes in people and their behavior, than it is to try to change people directly.

I always thought that this was one of many strategies that could be used to bring about change, but based on his writing, Fuller seemed to be convinced that this was the only effective way to bring about the desired changes. The reasoning is that our lives are already full of compensating behaviors that help us cope with a world that is insufficiently designed. If you try to change people's behavior, you are not addressing the root of the problem. You must focus on the design flaws that are bringing about the behavior.

I think it's worth pointing out here what we mean by environment. With all the discussion about saving the "environment", you might think that we mean the natural systems of Earth, but in this context, we are talking about the conditions in which a person finds herself living in and having to cope with every day. For most of us in the industrialized world, that has more to do with the human world than the natural systems of Earth. The environment includes our homes, the built world we travel through, our workplace, the laws we are subject to, the tools we use everyday, the messages we perceive in the media and the built world, our language, culture, traditions, religious ideas, and all the other things that humans have designed and created in the world. So by reforming the environment, we are essentially redesigning the human-built world, ideally in a way that does not interfere with the workings of the natural systems of Earth.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- *Critical Path*, p. 125 (item 11)

139 SUFFICIENTLY DESIGNED TECHNOLOGY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

140 SPONTANEOUSLY ADOPTED DESIGN

... *insert context statement*



Insert problem statement.

Rather than a strategy, this is really an indicator of successful design. If it is spontaneously adopted by people, then it is in line with evolution, according to Fuller.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- Look up quote by Fuller that describes how he would design a bridge to solve the problem of people making a dangerous ferry crossing, and how that would be spontaneously adopted.

141 EPHEMERALIZATION

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

142 GENERALIZED PRINCIPLES

... *insert context statement*



It is very easy, when looking at a complex problem or idea, to become overwhelmed by the sheer number of details.

- ◆ One of the fundamental assumptions of science is that "a great number of separate facts can be summed up in a much smaller number of general laws... in brief, nature is rational." (Jeans, p.8)
- ◆ The creation of generalizations is called inductive reasoning. We are much better at deductive reasoning than inductive reasoning. (Actually, it may be other way around.)

Therefore:

Look for generalized principles or patterns in the material you are trying to understand. These principles might be highly formal, like those found in science, or they may be less rigorous, such as rules of thumb.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

143 WHOLE SYSTEMS

... **insert context statement**



At any given moment, we are part of any number of natural and human-made systems; if we want our actions to produce a specific effect, we need to understand the systems we are acting upon.

To understand the consequences of what we do, we need to look at and try to understand how our actions affect other people and the world around us. Nothing is completely isolated. When things are connected and effect each other, they constitute a system. We need to understand the dynamics of the whole system to act intelligently and responsibly.

A system can be a car engine, an ecological habitat, a family, or any number of things made up of interacting components. You can't understand a system just by looking at its parts. The parts of a system interact to create behaviors that aren't predictable by looking at the parts separately. The behavior of whole systems as unpredicted by the behavior of the parts is called *synergy*.

Earth is operating as a single system, oblivious to our political boundaries, and the human world seems to be evolving toward a single system as well. Our understanding of systems needs to extend outside our city, states, country or continent.

Similarly, nature does not divide itself into categories. A water molecule doesn't care that we classify its behaviors under chemistry, physics, meteorology, hydrology, management issues, erosion, or any of the many other ways we look at water.

Understanding a system can be as simple as knowing what materials to combine in what quantities to create a desired alloy, or it is as complex as trying to understand what factors to change to bring about world peace.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

144 GENERAL SYSTEMS THEORY

... *insert context statement*



Insert problem statement.

Insert discussion text.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

145 SOMETHING THAT NEEDS DOING

... **insert context statement**



Insert problem statement.

RBF said that making a difference came down to this basic idea: find something that needs to be done and do it. This is not such a simple matter for a lot of people. Since we live in a [SPIRAL OF PROGRESS \(144\)](#), it appears that all the problems are solved.

The thing that you identify and choose to do is a very personal thing. The more your question resonates with you, the better you will be at solving it. It will come from your personal Universe, so it will be uniquely you. A mistake that most of us make is undervaluing our personal Universe and assuming we have nothing of value to contribute.

If something needs to be done, the implication is that no one else is doing it already. If they were, then it would no longer need doing. So your contribution will either be unique or redundant, and we are not looking to be redundant.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

146 BEST PRACTICES

... *insert context statement*



We can accomplish a lot by doing things in a "quick and dirty" way, but in the long run, cutting corners can catch up with us.

A best practice is a prescribed method of doing something that has been shown by experience to create the largest benefit with the fewest negative consequences.

In some disciplines, the quality of work is directly related to how closely best practices were followed. For example, the scientific method is essentially a collection of best practices designed to minimize the effect of human biases in discovering facts about Universe. The value of a scientific conclusion is based on how closely the scientific method was followed by the researchers. If the practices were sloppy, the data can't be trusted.

These patterns are an attempt to define best practices for thinking comprehensively.

Best practices tend to be the most thorough way of doing something and as a result they can take more time and effort. In the kind of time constraints that we face in everyday working conditions, it can be very tempting to take shortcuts so we can get the job done. The reasoning is that you can take care of any consequences later on.

Best practices sometimes take the form of laws or rules, though not all rules reflect best practices. If you are the kind of person who resists rules, take a second look and see if they are best practices in disguise.

Determining best practices is a tricky business. They usually come out of years of trial and error and from the experiences of many people. The reason for this is that it is very difficult to understand how specific practices will create consequences in the future, especially if we have never dealt with the consequences ourselves.

The longer we do something without experiencing any negative consequences, the more likely we are to consider it a good practice, even if it isn't.

For example, it's very easy to imagine that you are a good driver if you haven't had any accidents, but that is not necessarily a safe conclusion. It may just be that you've been lucky, or that you drive in very forgiving conditions such as a mostly deserted roads. It may be that the drivers around you are giving you a wide berth or are effectively reacting to your mistakes. The point is that there may be negative consequences to your practices of which you are not aware.

The thing that can make this a tragic flaw is that we like to feel that we are especially good at some things and our pride can close our minds. Be wary of the thought that you are exempt from the same rules as other. You may feel that you can get away with it, but it will likely be at the expense of others, and it may well catch

up to you.

Therefore:

Always try to go beyond "what works" and look for the best way to do something.



The habit of looking for better ways to do things is at the heart of self-improvement as well as making the world a better place, but you need to be willing to question the processes, techniques, and other things you know . . .

Footnotes:

Counter Arguments:

Note Pad:

- See notes on [JUST ENOUGH LEARNING \(98\)](#).

147 SPIRAL OF PROGRESS

... **insert context statement**



At first glance, it looks like all the problems have already been solved.

We live in a world where the problems that need to be solved are not very obvious, at least those of us living in developed countries where most people enjoy a high standard of living. It seems that everything we could need has already been invented or is likely to be unveiled by one of the major multi-national corporations sometime soon. And yet, we don't live in a perfect world. The reason is that the solutions we have now are imperfect. The truth is, everything we do could be done better. Buckminster Fuller put it this way in *Operating Manual for Spaceship Earth*:

"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."

The human-designed world is a collection of less-than-perfect solutions to problems that face humans living in the natural world: the need for shelter, food, clothing, transportation, a place to walk without getting our shoes dirty, and place to work, etc. That these solutions exist is the great human achievement. That most of these solutions create new problems in themselves is testament to the fact that our technologies are not very comprehensive in scope and nowhere near as sophisticated as the technologies of Nature. Some would argue that we should throw out our technology in favor of Nature, but the existence of technology is not the problem; the problem is that the technology is insufficiently designed.

Humans are so adaptable that we've come to think of many of these incomplete solutions as the only way to do something. We don't notice how difficult it is to do something until someone creates something better: a better tool, a better method, a better mousetrap. There is a huge opportunity available to anyone who can design a better way to do something and build it. On the other hand, there is a great demand for people who can navigate through the mess of current technology and make it work.

Interestingly, the perfect solution can never be reached. Once you create a better solution, the dynamics change and the solution begins to show its weaknesses. Progress must be a spiral. We rethink the way we do things and at the end of each cycle, we end up with a better solution, winding our way toward perfection. If we wait to achieve perfection then nothing will get done. Use of this and other patterns, however, can help

you maximize the benefits of your ideas.

Ideally, the world would be continuously improving, but that is not always the case. There is a great deal of emphasis on newness, but new is not always better. As a result, we spend a great deal of energy and don't progress much.

Therefore:

Insert solution statement.



To move up the spiral, look at current solutions and try to improve on them -- [A BETTER MOUSETRAP \(\)](#), or look for a completely new approach that makes the problem obsolete -- [MOUSE-PROOF HOUSE \(\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

148 ANTICIPATED CHANGE

... **insert context statement.**



Solving large problems takes time, and if we're not careful, the problem could change in such a way that our found solution is not sufficient once it's complete.

- ◆ This was an important idea in Fuller's bag of strategies. It was even part of his title of Comprehensive Anticipatory Design Science.
- ◆ Lack of anticipation is part of why governments don't do all that well in solving problems. Governments are reactive, which is the opposite of anticipatory.
- ◆ Anticipation requires the understanding and use of gestation periods.
- ◆ Problems are always moving targets. If you don't aim a bit ahead of the mark, you'll miss.
- ◆ This seems a little different than the idea that we need to anticipate problems (bugs) with a solution before it is created. Either "Anticipated Change" is too narrow an idea, or we'll need a number of variations on anticipation:
 - ◆ anticipating where technology will be in the future
 - ◆ anticipating how the design might be used or abused
 - ◆ anticipating how the problem will change
 - ◆ anticipating when something will grow into a problem
 - ◆ anticipating where science will be in the future

Therefore:

Therefore, using trend data and knowledge of gestation periods, anticipate how the problem may change over time and create your solution for that future problem rather than the present one.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- see *Critical Path*, p. 126 (item 13 & 14)

149 SCULPTED SCOPE

. . . in a Universe where everything is interconnected -- [EVERYTHING CONNECTED \(99\)](#), humans have a relatively limited ability to deal with all the connections. We start with everything -- [START WITH UNIVERSE \(91\)](#) -- this pattern helps us decide what to include in our thinking and what to exclude.



Insert problem statement.

- ◆ quote from Sir Arthur Eddington?? about starlight.
- ◆ Fuller's concepts of high and low frequency events.
- ◆ Note fuller's comment about Universe being non-simultaneously comprehensible.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

Note Pad:

- This could be renamed "Eliminated Irrelevancies".

150 PLAN FOR SUCCESS

... **insert context statement**



Insert problem statement.

In order to make progress in any endeavor, you need to plan time to do what is necessary to succeed. Otherwise, you can easily spend all your time thinking about doing something and then never doing it.

In *7 Habits of Highly Effective People*, Stephen Covey recommends a weekly review of what he calls your "roles and goals". *Body For Life* suggests a daily review of eating habits and exercise goals. My own experience suggests that I'm much more effective if I have a plan. And it has to be more than a list of things to do. It's important to look at the time available and fit items into a schedule.

Many of us are so busy that our time is largely scheduled for us. We go to work at a certain time, come home, do what we can, go to sleep, etc. If you want to ensure that something will get done, you have to make time for it. That's where scheduling comes in. But a plan should be flexible enough to allow for spontaneity. Be willing to bend your plan if life leads you in a different direction for a while.

You may be tempted to put it off until you have more free time, such as during a vacation, but in my experience, that rarely pans out. I find myself wasting my unscheduled time and being surprised by how quickly it passes.

There is a saying that says if you want to be sure that something will get done, give it to a busy person. Busy people tend to be good planners out of necessity. In addition, they have the advantage of inertia, they are already moving so they are more likely to get the project started.

It takes a significant amount of self-discipline to create your own schedule at times when the outside world doesn't dictate it for you. Whether you must schedule your whole day or just a few hours in the evening, find a way to do it so that it has authority or commitment behind it.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

151 CRITICAL PATH

. . . **insert context statement.**



Insert problem statement.

- ◆ NASA used this technique to deal with the complex problem of sending a person to the Moon.
- ◆ This is a formalized version of [FIRST THINGS FIRST \(142\)](#).
- ◆ Critical Path deals with the problem of dependencies. If one thing needs to be completed before another can be started, then those relationships are identified. Similarly, if two tasks can be done simultaneously they are identified and mapped accordingly.

Therefore:

Insert solution statement.



A big part of this pattern is getting things in order -- [FIRST THINGS FIRST \(142\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

152 FIRST THINGS FIRST

... **insert context statement**



We tend to get bogged down unless we know what we need to do next.

- ◆ This idea that some things need to be done before other ones can be started is the basis of "Critical Path" planning.

Therefore:

Plan ahead and make sure you know what needs to happen next. Rather than trying to do something three steps ahead and getting frustrated, do first things first.



It helps to have a fairly complete list of what needs to be done before you decide the next step -- [INVENTORY \(116\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

153 ACTION ITEMS

. . . *this pattern helps complete* VISION OF THE FUTURE (119).



It's easy to get overwhelmed when we look at what we need to accomplish in terms of big projects. It only takes a few big projects to have many of us wondering where to start and feeling like we'll never be able to do it all.

Break down big tasks into steps that you can easily accomplish. If you're not sure how to do a step, write an action along the lines of "figure out how to do this."

It takes some practice to do this well. Most of us think in terms of larger tasks rather than the steps required to accomplish those tasks. Here are some examples of too-large tasks and how they might be broken into smaller action items:

- ◆ clean the house
 - ◆ straighten up downstairs
 - ◆ vacuum living room
 - ◆ wash the dishes
 - ◆ make the bed
- ◆ buy theater tickets
 - ◆ look up web address of theater
 - ◆ determine how tickets are sold
 - ◆ buy the tickets

The reason this is useful is that it helps keep tasks manageable. It takes what might be a daunting list item and makes it much easier to make progress on. It helps to overcome procrastination, or fear of doing something. It also helps when you feel overwhelmed.

Therefore:

Insert solution statement.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:**Note Pad:**

- I don't really like this name.

154 BRAIN DUMP

. . . *this pattern helps complete* [INVENTORY \(116\)](#).



Our brains can become easily overwhelmed with ideas, thoughts, things to do, and other mental distractions.

◆ To be as specific as possible, try to write your list as a collection of next steps -- [ACTION ITEMS \(143\)](#).

Therefore:

As you feel the need to, empty your brain of all the items it is struggling to remember by writing them all down.



Keep the list handy so you can trust it as an extension of your mind -- [CONVENIENT NOTEBOOK \(110\)](#) . . .

Footnotes:

Counter Arguments:

Note Pad:

155 STUDY PLAN

. . . sometimes setting aside time to study -- [TIME TO THINK \(54\)](#) -- is not enough to inspire you to do it. This pattern offers one option for restarting your studies.



Some of us require more structure to our learning than is naturally provided by self-directed learning.

Insert discussion text.

Therefore:

If you think it fits your learning style, draw up a plan that includes what you're going to study on what days and times, and stick to your plan.



Insert posttext statement. . . .

Footnotes:

Counter Arguments:

- Planning to study can be an avoidance technique, so it's important that the person be self-aware enough to know if it will really something that will move her forward.

Note Pad:

156 THINKING OUT LOUD

... *insert context statement*



Insert problem statement.

Thinking out loud, or talking to yourself, is a great way to slow your mind down. In my experience, it's almost always guaranteed to bring a new thought into my head.

It can help with [TEACHING TO LEARN \(84\)](#) with or without a student.

It can be done in your car, lulling the baby to sleep, wherever you feel safe -- [A PLACE TO THINK \(57\)](#)

This is a great tool for integrating knowledge because it requires you to put ideas into a context -- to tell a story of sorts.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

- I should look into whether talking activates a different part of your brain than writing. Otherwise, this could be seen as simply verbalizing ideas either by talking or writing. I suspect they are different. For starters, talking happens faster than writing and I think there is more opportunity for surprises.

157 PROTOTYPED CAPABILITIES

... **insert context statement**



An idea is fleeting and easily dismissed until you can see it in action or hold it in your hand.

Another phrase for this is "proof of concept" and it is the process of implementing a design to the point where you can say with confidence that it will work. It is a way to limit costs while still showing that an idea will work in reality. Often, this is done to secure further funding, but it doesn't have to be that way.

Therefore:

Insert solution statement.



Insert posttext statement. ...

Footnotes:

Counter Arguments:

Note Pad:

158 COMMUNICATED EXPERIENCE

. . . [UNIVERSE \(45\)](#) is the aggregate of all communicated human experiences. This pattern helps to establish ways that you can expand Universe by sharing your own experience.



Human lives are rich with experiences unique to each individual, but those experiences are lost when a person dies, unless that person communicates them to the world at large.

- ◆ Think about all the people who have lived before us. Each of them represents a huge body of experiences. Much of that experience has been lost because it was never communicated. Some of it was written down and has survived the passage of time; some was passed on verbally to their children; but most of it was lost. It may be that these experiences live on in the souls of those who have passed, but they remain unavailable to those of us left here on Earth.
- ◆ Many people think that they don't have anything to contribute. They may be blue collar workers who think writing is for the more educated, but they are often the people who are closest to the daily life-support functions of our planet. They likely have insights into how things could be improved that are gleaned from a lifetime of experience.
- ◆ One important way to communicate an idea is to build it, to create an artifact. There is no better way to show that an idea will work than to build a working prototype of it. Written words are artifacts in themselves, but they represent ideas rather than embody them. It's possible to write about an idea that has no hope of working, but you can't build idea that can't be built. The laws of nature are a tough critic.
- ◆ Anyone who has tried to learn more about their ancestors has experienced just how much knowledge is lost when a person dies. As soon as you start looking for information about people who are out of the direct experience of you or your parents, the amount of information goes down significantly.

Therefore:

Devise a system for recording your experiences and insights in a way that will make them available to as many people as possible for as long as possible.



Write as though you were explaining the ideas to someone else -- [INTERRUPTABLE LINE OF THOUGHT \(55\)](#). . . .

Footnotes:

Counter Arguments:

Note Pad:

WORLD

We begin with those patterns which define what we mean by a world that works for all humanity and what it might look like. These patterns are too broad to be designed and built all at once, but they provide a context for the work that needs to be done and can act as guides for how we approach our individual contributions. If we integrate these patterns into our thinking, our collective works will begin to create a world with these patterns in it.

This is the main text of the section.

World That Works: A Pattern Language – **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [World](#) > [Top](#)

1 WORLD THAT WORKS

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

Before we can say that we have a world that works, we have to define what that means;

- 2 EVERYONE LIFTED UP
- 3 HIGHEST STANDARD OF LIVING
- 4 SUCCESS AS THE NORM
- 5 CONTINUING SUCCESS
- 6 REGENERATIVE SUCCESS
- 7 STEWARDS OF EARTH

work to protect and maintain the natural systems that we depend upon;

8 [HEALTHY NATURAL SERVICES](#)

9 [STABLE CLIMATE](#)

10 [DIVERSITY OF LIFE](#)

within these natural systems, encourage the formation and protection of natural places that experience limited human impact;

11 WILD PLACES

12 SPACE FOR OTHER LIFE

World That Works: A Pattern Language — **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [World](#) > [Community](#)

organize people according to physical, cultural and political realities into regions that are small enough for individuals to have a say in how they are run;

13 [ONE-WORLD CITIZENSHIP](#)

14 [UNION OF WORLD COMMUNITIES](#)

15 [SUBCOMMUNITIES OF WORLD MAN](#)

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

work to provide basic needs globally by building the industries and infrastructure required to take advantage of global scale efficiencies;

- 16** INDUSTRIALIZATION
- 17** LIVINGRY INDUSTRIAL COMPLEX
- 18** WORLD SERVICE INDUSTRIES
- 19** DECENTRALIZED GLOBAL INDUSTRY
- 20** GLOBAL ENERGY NETWORK
- 21** GLOBAL COMMUNICATIONS NETWORK
- 22** GLOBAL TRANSPORTATION NETWORK
- 23** HEALTH CARE SYSTEM
- 24** EDUCATIONAL SYSTEM
- 25** HOUSING INDUSTRY
- 26** CLOTHING INDUSTRY
- 27** FOOD PRODUCTION INDUSTRY
- 28** GLOBAL WATER SYSTEM

build sustainable economic systems by basing them on renewable energy and concepts compatible with the reality of finite physical resources;

29 [ENERGY ACCOUNTING](#)

30 [GLOBAL ENERGY BUDGET](#)

31 [WEALTH AS CAPACITY](#)

32 [GROWTH BY EPHEMERALIZATION](#)

33 [ACCOUNTABLE CORPORATION](#)

34 [TEMPORARY OWNERSHIP ECONOMY](#)

within the independent regions, establish ways to make sure
people have a say in how things are done;

35 [GOVERNMENT](#)

36 [FREE PRESS](#)

37 [TRANSPARENT POWER](#)

ensure that each independent region has the elements of a stable state;

38 [STANDING MILITARY](#)

39 [POLICE FORCE](#)

40 [JUDICIAL SYSTEM](#)

World That Works: A Pattern Language – **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [World](#) > Human Rights

41 BASIC HUMAN RIGHTS

42 INDIVIDUAL INFLUENCE

43 EDUCATION FOR EVERYONE

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

build the infrastructure that is local and needs to be in local
control;

44 SEWAGE TREATMENT

ensure that important social services are available regardless of
where people live;

45 AVAILABLE ENERGY

World That Works: A Pattern Language – Working DRAFT

[Cover Page](#) > [Patterns](#) > [World](#) > [Ethics](#)

46 SCIENCE OF ETHICS

47 THE ETHICAL RULE OF LAW

48 MINIMAL INTERFERENCE

49 UNIVERSAL ADVANTAGE

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

work to ensure that the belief systems people are basing their
actions on reflect reality;

50 RATIONAL SPIRITUAL LIFE

encourage the idealism of youth to have the courage to embrace
the kind of change that is needed;

51 [ADVANTAGED NEW LIFE](#)

52 [MODELS OF THE INVISIBLE](#)

World That Works: A Pattern Language — **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [World](#) > Design Science

53 [DESIGN SCIENCE REVOLUTION](#)

54 [COMPREHENSIVE COORDINATION](#)

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

World That Works: A Pattern Language – **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [World](#) > Intellectual Resources

55 [UNIVERSE](#)

56 [INTELLECTUAL HERITAGE](#)

57 [LIVING LIBRARY](#)

© 2006-2009 James B. Applegate, Jr. All Rights Reserved.

INDIVIDUAL

This completes the broad patterns that define the fundamental requirements of a world that works for all humanity. We now start the part of the language which gives shape to the primary tool used to create such a world — your mind. These are patterns of thinking which can help you understand the world more comprehensively and discover the unique contributions that you have to offer. These patterns are under your complete control as you are the only one who can change how you think.

This is the main text of the section.

World That Works: A Pattern Language — **Working DRAFT**

[Cover Page](#) > [Patterns](#) > [Individual](#) > Being An Individual

it takes a true individual to make a significant contribution to a better world;

58 [COMPREHENSIVIST](#)

59 [YOUR OWN THINKING](#)

60 [ACCURATE PERSONAL UNIVERSE](#)

61 [TRAINED MIND](#)

62 [SELF-DIRECTED LEARNER](#)

63 [SELF DISCIPLINE](#)

to get started on your adventure, try setting up your life in a way
that accomodates your new activities;

64 [TIME TO THINK](#)

65 [INTERRUPTABLE LINE OF THOUGHT](#)

66 [ELIMINATING DISTRACTIONS](#)

67 [A PLACE TO THINK](#)

68 [HOME LABORATORY](#)

69 [EXTENDED LIBRARY](#)

explore your mind and your unique knowledge and experiences so
you can better understand yourself and how you might be able to
contribute;

70 [MULTIPLE INTELLIGENCES](#)

71 [LANGUAGE AND CULTURE](#)

72 [LEARNING STYLE](#)

73 [CONSCIOUS PHILOSOPHY](#)

74 [TESTED ASSUMPTIONS](#)

75 [EMOTIONAL LITERACY](#)

76 [PERSPECTIVE](#)

77 [AUDIBLE INTUITION](#)

look for the reasons you want to work on something like this, and
nurture your passions to keep you moving forward;

- 78** SERVICE TO HUMANITY
- 79** REGENERATIVE THOUGHT
- 80** POLLYANNAESQUE VIEWPOINT
- 81** SUPPORT FROM OTHERS
- 82** ACHIEVEMENT ROLE MODELS
- 83** BEHAVIORAL ROLE MODEL
- 84** IMAGINATION
- 85** CURIOSITY
- 86** BALANCED LIFE
- 87** FLOW

as human beings, we are not privy to all the workings of Universe.
That sense of there being more to things than what we can see is
at the heart of spirituality;

88 FUNDAMENTAL MYSTERY

The process of learning is the process of solving problems; in both cases we start with a question and seek and answer. These patterns look at learning in the context of creating change;

- 89** [LEARNING AS PROBLEM SOLVING](#)
- 90** [EDUCATIONAL EXPERIENCE](#)
- 91** [LEARNING BY UNDERSTANDING](#)
- 92** [RETHINKING](#)
- 93** [TIME TO ABSORB NEW KNOWLEDGE](#)
- 94** [TEACHING TO LEARN](#)
- 95** [WRITING TO LEARN](#)
- 96** [TEMPORARY SPECIALIST](#)

work to look at your knowledge in ways that help keep you
flexible and open to new ideas;

97 [KNOWLEDGE AS HYPOTHESIS](#)

98 [ACCEPTED IGNORANCE](#)

99 [LEVELS OF KNOWING](#)

100 [HIGH QUALITY KNOWLEDGE](#)

as you gain more knowledge, strengthen it and extract the most
meaning you can by integrating it with the other things you know;

101 [START WITH UNIVERSE](#)

102 [EVERYTHING CONNECTED](#)

103 [SPIRAL OF THINKING](#)

104 [TUNED FILTERS](#)

105 [FILLING IN THE GAPS](#)

106 [RECONCILED CONTRADICTION](#)

to create a more accurate personal universe, develop habits that can serve to find inconsistencies, false information, and avoid other cognitive biases;

107 ACTIVE MIND

108 JUST ENOUGH LEARNING

109 MULTIPLE CONCLUSIONS

110 ACCURATE LANGUAGE

111 SUSCEPTIBLE TO PROGRESS

112 HEALTHY SKEPTICISM

build in your mind the landmarks that will help you use your
mind more effectively;

[113](#) TOOLBOX OF SYMBOLS

[114](#) REFERENCE NUMBERS

[115](#) MEMORY FRAMEWORKS

to aid in your thinking, take advantage of some of the tools and techniques we have invented to compensate for some of the limitations of the human mind;

116 BRAINSTORM

117 SKETCH

118 COMPUTER MODEL

119 MIND MAP

including those tools that help us get a handle on complex ideas
where there are many elements that need to be worked through;

120 [CONVENIENT NOTEBOOK](#)

121 [SLIP FILE](#)

122 [PATTERN LANGUAGE](#)

123 [EXTENSIVE CROSS REFERENCING](#)

124 [WRITTEN INDEX](#)

125 [CHRONOFILE](#)

126 [INVENTORY](#)

COMPREHENSIVE THINKING

We now start the part of the language which explores how we might go about creating a world that works. Specifically, these patterns define the process of comprehensive thinking.

This is the main text of the section.

to create a change in the world, you first have to be convinced
that it's something you can do;

127 SENSE OF A BETTER WORLD

128 POWER TO AFFECT CHANGE

129 VISION OF THE FUTURE

130 YOUR UNIQUE CONTRIBUTION

131 RESPONSE-ABLE MIND

look at different strategies you can use to create change;

- 132 COMPREHENSIVE THINKING
- 133 TAKING THE DESIGN INITIATIVE
- 134 WORK WITH EVOLUTION
- 135 TRIMTAB
- 136 ONE ON ONE CONTACT
- 137 BETTER TOOLS
- 138 REFORM THE ENVIRONMENT
- 139 SUFFICIENTLY DESIGNED TECHNOLOGY
- 140 SPONTANEOUSLY ADOPTED DESIGN
- 141 EPHEMERALIZATION

keep these tools close by so you can be more effective;

142 [GENERALIZED PRINCIPLES](#)

143 [WHOLE SYSTEMS](#)

144 [GENERAL SYSTEMS THEORY](#)

the more you begin to see the world through a comprehensive
perspective, begin to look for places that can be improved;

145 SOMETHING THAT NEEDS DOING

146 BEST PRACTICES

once you've identified something that needs doing, decide what aspects of the problem you can explore effectively and set some goals;

147 SPIRAL OF PROGRESS

148 ANTICIPATED CHANGE

149 SCULPTED SCOPE

once you have an idea what you want to do, you will need to plan
for achieving it;

150 PLAN FOR SUCCESS

151 CRITICAL PATH

152 FIRST THINGS FIRST

World That Works: A Pattern Language — Working DRAFT

[Cover Page](#) > [Patterns](#) > [Comprehensive Thinking](#) > [Getting Unstuck](#)

use those times when you seem stuck and don't know what to do
next to step back and get a bigger picture;

153 ACTION ITEMS

154 BRAIN DUMP

155 STUDY PLAN

156 THINKING OUT LOUD

build your idea in the real world so you can find out if it actually works;

157 PROTOTYPED CAPABILITIES

communicate your discoveries to others and add to the
intellectual heritage of humanity;

158 COMMUNICATED EXPERIENCE