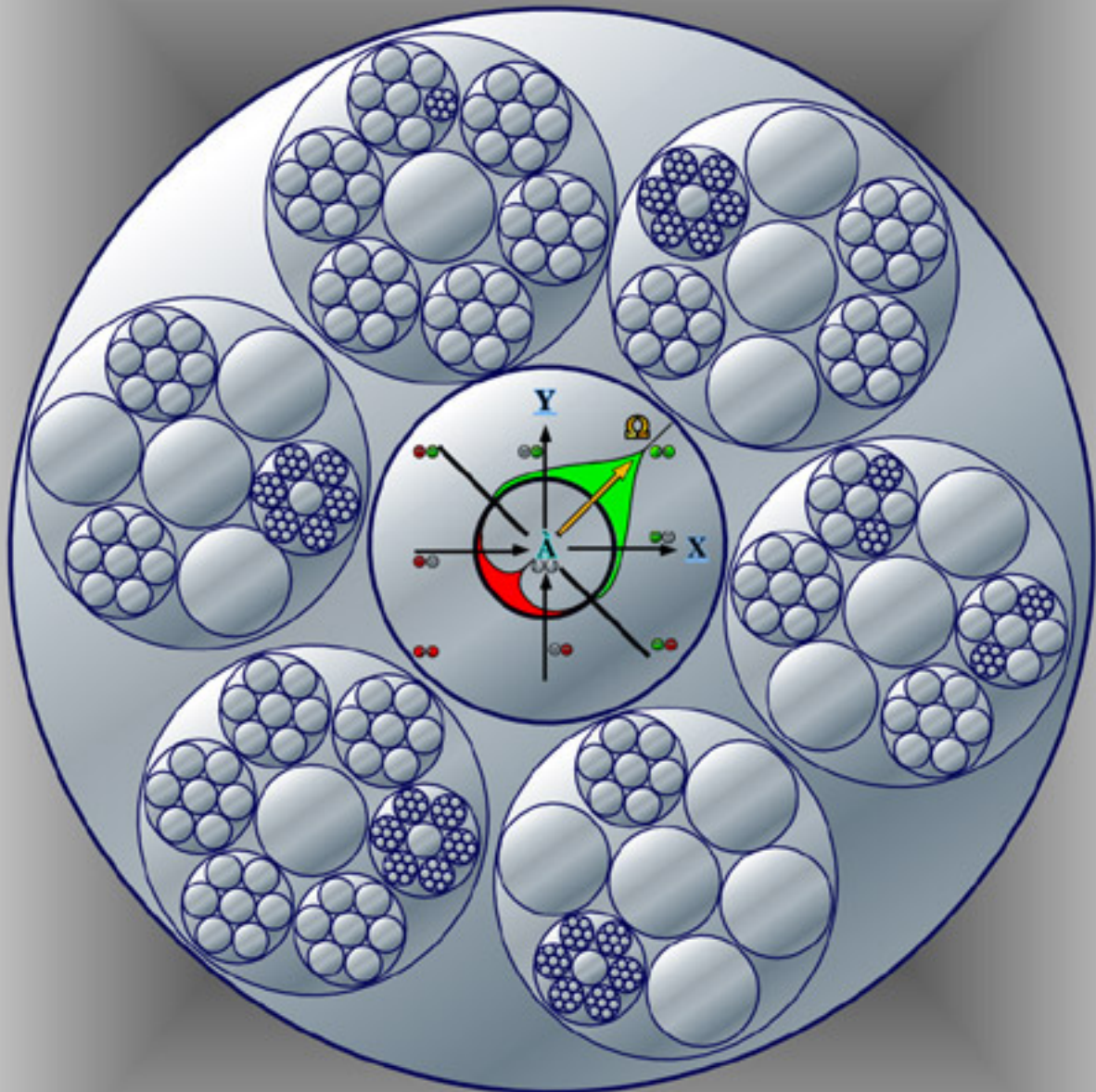


ORTEGRITY

Bridge to a Synergic Future



Timothy Wilken, MD

Preface — Searching for a better world

I am a physician and scientist. I want a better world for myself, and my family. I want a future world that is truly civilized — a world that is free of hate and violence — world without fear. I want a safe earth.

In 1972, I committed myself to finding the necessary knowledge to help change our world. By 1974, I was devoting nearly all of my free time searching for a better world. The more I searched the clearer it became that the positive future I desired would require that we humans give up violence — that we humans eliminate adversary behavior.

As I studied human behavior, I began to see violence as a disease. And one that clearly caused as much pain and suffering as any other disease that had ever plagued humankind. As a physician and scientist, I knew that when you truly understood a phenomena you could learn to control it.

The history of science and the story of human progress is one of understanding and control. If we could learn to understand human behavior, we could learn to control it. I knew from my study of medical history that the discoverers of cures possessed a thorough understanding of both the disease process they were trying to cure and the organ systems effected by that process. If I aspired to find a cure for human violence, I would have to understand both the adversary process that generates violence and the human mind. Only then could I hope to create an effective treatment for adversary behavior

My search for a cure lead me to read thousands of books, to converse with dozens of scientists, and to intensely study many disciplines. My focus finally settled on studying human behavior, human relationships, and human intelligence. Slowly, I began to master this developing new science which for want of a better term I simply called "humanology".

In my search, I found a number of exciting and promising discoveries, and have been fortunate to make a few of my own. This is a disclosure of one of those discoveries. It is a new system for organizing groups of humans.

Synergic Science

When I began the book from which these pages are taken, the working title was **SafePassage**. That was to remind me that the goal of this work was reveal a safe path that humankind could follow to move from our adversary-neutral past to a synergic future.

However as the book evolved, it began to write itself. Eventually, it became clear to me that the the book's real title was **UnCommon Sense**. SafePassage was embedded throughout the book, but it became most important as the next step for humanity once they had seen the shape of the future. How do we get there from here?

Some of you may be familiar with the term synergy. Synergy means working together—operating together as in Co-Operation—laboring together as in Co-Laboration—acting together as in Co-Action. The goal of synergic union is to accomplish a larger or more difficult task than can be accomplished by individuals working separately.

R. Buckminster Fuller was a pioneer of **synergic science** — the science of **whole** systems, he considered **the relationships between the parts that make up a system**. He discovered that it is **how** these parts relate with one another that will absolutely determine the success of the whole system.

The dictionary defines synergy as the working together of two things to produce an effect greater than the sum of their individual effects. A simple example might be two muscles working together or two medications combined to treat a medical illness. R. Buckminster Fuller writing in 1975 explained it this way:

"Synergy means behavior of whole systems unpredicted by the behavior of their parts taken separately. Synergy means behavior of integral, aggregate, whole systems unpredicted by behaviors of any of their components or subassemblies of their components taken separately from the whole. Synergy is the only word that means this. The fact that we humans are unfamiliar with the word means that we do not think there are behaviors of "wholes" unpredicted by the behavior of "parts".

"Synergy can best be illustrated I think, by chrome-nickel-steel – chromium, nickel, and iron. The most important characteristic of strength of a material is its ability to stay in one piece when it is pulled – this is called tensile strength, it is measured as pounds per square inch, PSI. The commercially available strength of iron at the very highest level is approximately sixty thousand PSI; of chromium about seventy thousand PSI; and of nickel about eighty thousand PSI. The weakest of the three is iron.

"We all know the saying, "a chain is only as strong as its weakest link". Well, experiment on chrome-nickel-steel, pull it apart, and you will find that it is much stronger than its weakest link of sixty thousand PSI. In fact it is much stronger than the eighty thousand PSI of its stronger link. Thus the saying that a chain is as strong as its weakest link doesn't hold. So, let me say something that really sounds funny: Maybe a chain is as strong as the sum of the strength of all its links. Let's add up the strengths of the components of chrome-nickel-steel and see. Sixty thousand PSI for iron and seventy thousand PSI for chromium and then and eighty thousand PSI for the nickel, that gives you two hundred and ten thousand PSI. If we add in the minor constituency of carbon and manganese we will add another forty thousand PSI giving us a total of two hundred and fifty thousand PSI.

"Now the fact is that under testing, chrome-nickel-steel shows three hundred and fifty thousand PSI—or one hundred thousand PSI more than the combined strength of all the links.

"This is typical of synergy, and it is the synergy of the various metal alloys that have enabled industry to do all kinds of things that man never knew would be able to be done based on the characteristic of the parts."¹

Another Synergic Science pioneer **Edward Haskell** taught us that when we apply synergic science to examining our human relationships, we discover:

- relationships can be **adversary** where either I lose or you lose or we both lose,
- relationships can be **neutral** where we don't lose, but neither do we win,
- or, relationships can be **synergic** — good for both of us — **WIN-WIN**.

¹R. Buckminster Fuller, SYNERGETICS—Explorations in the Geometry of Thinking, Volumes I & II, New York, Macmillan Publishing Co, 1975, 1979

Synergic system analysis reveals that **efficiency** within a system is a direct variable of the type of relationship. **Win-win relationships maximize efficiency.** Win-lose or lose-win relationships severely limit efficiency. And the lose-lose relationship allows no possibility of efficiency.

We can be more working together than we can be working separately. And, much more working together than we can be working against each other. This is just common sense.

Human synergy is working together by explicit intent. $(1+1)>2$

Human neutrality is working separately and ignoring each other. $(1+1)=2$

Human adversity is working against each other. $(1+1)<2$

R. Buckminster Fuller and **Edward Haskell**'s achievements were in understanding how **whole systems** are created in physical Universe. They discovered that Nature always forms whole systems using **win-win relationships**. This results in the **sum of the whole system** being much **more than** the **sum of the parts** making up the system.

Nature was always seeking more for less — always seeking maximum efficiency in all that she did. Fuller called the principle of **seeking more for less** the "**dymaxion**" way. This is of course simply another way of stating the **Principle of Least Action**.

Synergic Systems — the cooperator's reward

The most **dymaxion** principles always occur within **wholes**. Wholes — made up of parts having win-win relationships with each other. It is the **win-win relationship** that produces a profit for all of the parts. This is **why** the sum of the whole is **more** than the sum of the parts. **Edward Haskell's** term for this **more** is the **cooperator's reward**.

I was interested in synergic relationships not with atoms or molecules, but with human beings. I knew there was no law of Nature preventing humans from forming win-win relationships. If we humans could learn to organize synergically, we would also gain access to the **co-operator's reward**.

By applying **win-win strategy** to human organizations, it would be possible to to synergize an organization so that the **sum of the whole organization** is **much more than** the **sum** of the talents, abilities, & resources **of the individuals** making up the organization.

Adversary Systems — the conflictor's loss

However, today's human organizations are at best **neutral systems** with much internal **adversary** process, or at worse **adversary systems**. Adversary process is characterized by **losing relationships** between the individuals of the system.

Adversary process is by definition **conflict** — the struggle to avoid loss. Within an **adversary system**, the **sum** of the whole organization is **much less than the sum** of the talents, abilities, & resources of the individuals making up that system. **Haskell** called this **much less** — the **conflictor's loss**.

Conflict and losing relationships severely limit **efficiency, productivity, and quality of work-life**. If we humans desire **more for less**, we must learn to **organize without conflict**. If we desire to **avoid the conflictor's loss**, we must learn to **organize without "losing" relationships**.

Nature has succeeded in removing the conflict from between the cells of our bodies., Can we learn to remove the conflict from between the individuals within our human organizations? Nature has learned to produce win-win relationships between the cells and tissues, between the organs and systems of organs that comprise the human body. Can we humans now learn to produce win-win relationships between the individuals and departments, between the units and divisions that comprise our organizations?

I believed the very future of our species depended on finding the way. I knew the ideal system would be synergic, but as to what particular form it would take I was not sure.

Discovery in North Carolina

Independent of me, another synergic scientist **N. Arthur Coulter, Jr., MD** had been seeking to develop an ideal system of organization for human beings. He defined ideal as that system that would maximize both freedom, and quality of life for all within the system. He was the author of ***SYNERGETICS: An Adventure in Human Development***. I discovered him by purchasing his book based on its title from a science catalog. I was so impressed with his book that I took a chance and wrote him. We soon developed a long distance friendship.

Coulter was also searching for a better world. He had realized that with the dropping of the Atomic bomb on Japan, humanity had reached a crossroad. That our weapons were now of such power that they threatened us all with extinction. He concluded:

“What is needed is nothing less than a major evolution of the human mind, which would give the rational, humane part of the mind a much greater control over the emotional part.”

Coming out the Army at the end of 1945, Coulter switched his focus from Mathematics and entered Harvard Medical School. He said he needed to learn all he could about the human brain and mind. Thirty years later, he was Chairman of the Department of Biomedical Engineering at the University of North Carolina School of Medicine. But whenever he wasn't teaching medical students, his focus was on understanding human thinking and human relationships.

In March of 1983, I traveled from my home on the west coast of Northern California to meet with **Dr. Coulter**. From Chapel Hill, we traveled by car a small private retreat he had built on a lake in nearby Virginia. It was a beautiful and very quiet place ideal for thinking and corroboration. He called it *Synergia*.

The purpose of our meeting was two-fold, first to share our research findings about human relationships, behavior, and thinking, and then to design or at least establish criteria for designing a “conflict-free” organizational system for humankind. As synergic scientists, we both believed an ideal system would be based on **win-win relationships**.

As our discussions began, I felt sure the system would be a form of capitalism. I had studied theoretical capitalism for a number of years.

One capitalistic theorist, Andrew J. Galambos had proposed an advanced capitalistic system which was **non-coercive**. Its underlying premise was to eliminate and prohibit loss. Galambos' proposed system **did not** insure win-win relationships, but it promised to eliminate losing relationships. Galambos' system was a type of SuperNeutrality. It allowed win-draw, draw-win, draw-draw, or win-win. It was committed to the protection of property. But, the definition of property was expanded to include your life, freedom, ideas, and actions. Galambos' Capitalism was a much more powerful form than exists today. With its absolute prohibition of injuring others, it can be thought of as *Moral Capitalism*. Its tenets included the absolute protection of property, individual freedom, and total responsibility.

Galambos's "SuperNeutrality — Moral Capitalism"² retained many of Neutrality — Capitalism's value systems. In 1983, I shared most of these values. However, even then I knew there was an even better way possible. I felt Galambos's system could be modified into the synergic system we were seeking. I envisioned the ideal system would be a form of *Synergic Capitalism* — **win-win capitalism**.

As a synergy scientist, Coulter was sensitive to the **wholistic** view — a view he associated with theoretical socialism. He felt the needs of the species were more important than the needs of the individual. As the Star Trek character Spock said, "The needs of the many outweigh the needs of the few, or the one."

Unaware of Galambos's work, Coulter assumed all capitalistic structures had to be based on **win/lose** dynamics, and therefore he was opposed to them on principle. Coulter envisioned a form of *Synergic Socialism* — **win-win socialism**.

Stalemate — Warring Ideologies

Socialism and capitalism are often polarizing words in our culture. And, Coulter and I also had our hidden assumptions. We discussed the issues long into that first night. And yet as adaptive and open as Coulter and I might hope to be, we were starting very far apart.

² Andrew J. Galambos, *Volition 201—Introduction to Primary Property*, Free Enterprise Institute, Los Angeles, Privately Published 1963-84.

Over breakfast the next morning, we both shared our concern over the risk of a **stalemate**. It seemed our starting premises were exclusionary. The ideal system couldn't be both capitalistic and socialistic. Capitalistic — Socialism or Socialistic — Capitalism? It just didn't work.

Above all else Coulter and I were committed to the **scientific way**. As scientists, we knew all beliefs were only models of how Nature works. That all models were only temporary, even the best were theoretically obsolete on the day they are made. All models would someday to be replaced with better ones. Newton's model of Universe served us well for over two hundred years, but Einstein's model of Universe replaced it all the same. Everyday somewhere on the planet a human being is discovering something new about Nature that will eventually change all of our opinions. We both agreed that **all present political systems were adversary systems**. That all present systems were and are **coercive** systems. Our commitment to synergy's win-win principle required that Coulter and I be apolitical. We could not endorse any political system. Our interest in theoretical capitalism or theoretical socialism related only to their underlying patterns of organization.

We also agreed that finding the ideal organizing strategy for humankind was important if not critical. Neither of us wanted a stalemate. We both committed to openly considering the other's point of view, and further pledged a willingness to modify our positions based on the power of each other's arguments. But after hours of discussion, I still believed the ideal system would be a form of synergic capitalism, and Coulter believed it must be some form of synergic socialism.

Korzybski's General Semantics

We decided to formalize our discussions by utilizing the powerful communication science — **General Semantics**. Alfred Korzybski originated General Semantics to take the misunderstanding out of communication. He is quoted as saying:

“There can be no disagreements only misunderstandings. We are all looking at the same universe, in the end we must agree.”

I hoped Korzybski was right, and that Coulter and I would somehow discover we were only misunderstanding each other. But I had my doubts, capitalism and socialism — could they ever be resolved into a single system? No, it had to be either one or the other.

I hoped General Semantics would lead us to an answer. If it was to be socialism, then I was willing to change my position. But Coulter, would have to prove he had a better system.

After breakfast, I began by presenting the basic postulates underlying theoretical capitalism and its underlying relationship to hierarchical strategy, and then Coulter presented the basic postulates of theoretical socialism and its underlying relationship to heterarchical strategy. First I would teach him, then he would teach me. We alternated back and forth.

By late in the afternoon of our second day, we had both learned a lot. I was beginning to see the power and value of **heterarchy**, and Coulter was discovering the power and value of **hierarchy**. Both of us had held a number of false assumptions about the other's position. However no real progress was made towards our ideal system. And, we still found ourselves butting heads over the terms capitalism and socialism. It seemed both of us carried strong emotional opinions about the terms in our unconscious. Our strong emotional attitudes seemed to block any hope for a solution in the little time we had available. If we didn't change our focus, hope for any meaningful solution would be lost. Because our unconscious attitudes were sabotaging our efforts, we agreed to drop the terms capitalism and socialism completely from our discussion.

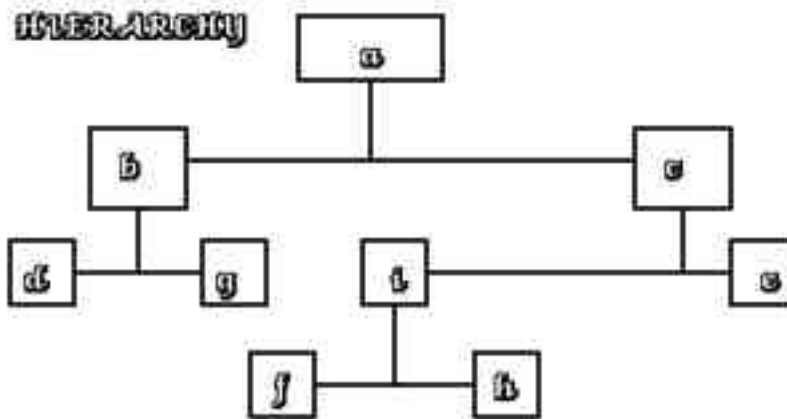
Beyond Capitalism & Socialism

Coulter and I both agreed that what was really important was to create a system that produced only win-win relationships. If we succeeded at that, then whether it was "capitalistic" or "socialistic" might not really matter. At this point, we agreed to change our focus to "hierarchy" and "heterarchy". We began seeking a unique system that would transcend both capitalism and socialism — perhaps we could call it simply **synergism**.

I began by discussing the underlying structure of capitalism. I felt that even if the ideal system wasn't capitalistic it would still have to retain **hierarchy**.

Hierarchy is a **vertical system** with many levels of organization. Those with greatest responsibility and authority occupy the higher levels. **Hierarchy** creates a feeling of **difference** or **individuality**. Individuals within the system see each other vertically, "He is over me." "I work under John." "He is way up in the company" "She is the lowest one on the totem pole."

Hierarchy is humanity's **oldest** organizing strategy. It was born in the **jungle**, was nurtured in the **cave**, grew up in the **tribe**, blossomed with **feudalism**, and today **dominates** nearly all the corporations, institutions, governments, and militaries of earth. Hierarchy is often experienced as the **chain of command** or **pecking order**. It is most formalized in **military combat**.



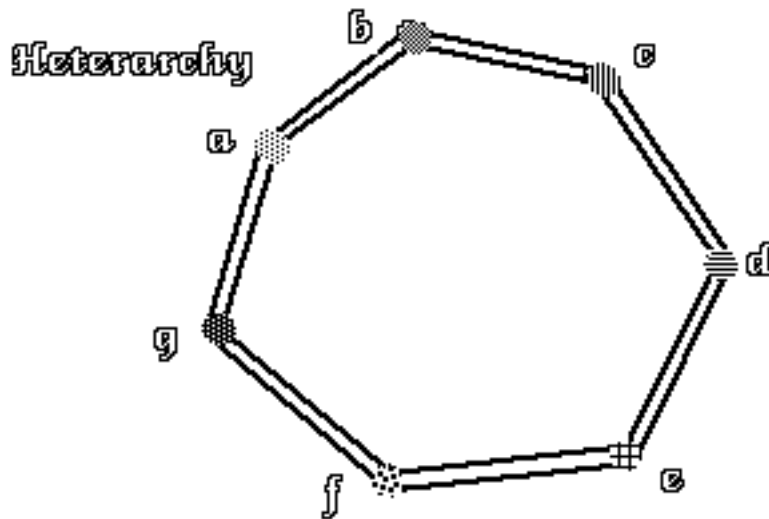
In business organizations, hierarchy is often experienced as an extension of the personalities of those **individuals** who founded the company. The operating policies of the company are a reflection of the values of the **individual** founders. Individuals with similar values are often selected to continue the company. So we see the primary concerns of a **hierarchy** are the **goals** of those few **individuals** that control it.

This is **why American companies** have **individual decision making**, and **individual responsibility**. Hierarchy has a **particulate focus** because goals are **particular** to the **individuals** who create them.

Hierarchy's focus on the individual **does lead** to the stimulation of individual **innovation**, **creativity**, and **originality**. This leads to the development of a few individual **stars** who tend to dominate the company. **Individuality** has its strengths — one of which is **rapid decision making**. One individual can always decide much quicker than a group. I highly valued the individual and felt reliance on the best individuals had to be good for the whole group. Now it was Coulter's turn to speak for heterarchy.

Coulter was just as sure the ideal system must be a **heterarchy**. His commitment to heterarchy was supported by research findings which revealed human relationships are optimized when humans feel they are valued at the same level.

The primary organizing strategy of theoretical socialism is **heterarchy**, this is in sharp distinction to political socialism which is usually hierarchical.



Heterarchy is a very different breed of organizational strategy than hierarchy. It is a **horizontal** system with only **one** level of organization. **All are equal within the heterarchy**. Individuals within the system see each other as being on the **same** level. "We are a team." "Its like a family rather than a job." "We all respect each other."

Heterarchy is **ideal** for **communication** and **discussion**, because it allows for the sharing of responsibility and authority within an informal environment. Task assignments following open discussions, produce more cooperative working relationships. In a setting where associates feel valued, **openness** and **integrity emerge**. Individuals often take much greater roles in the tasks of their departments. In this setting, there is less conflict, **and this usually results in improvement in efficiency, productivity, and quality of work-life**.

Heterarchy creates a feeling of oneness — a feeling of community. Members of a heterarchy strongly identify with the **whole system**. Morale and **esprit de corps** are optimized. Because heterarchy is **highly inclusive**, all feel that they are a part of the system. This is in strong counter distinction to hierarchy's **exclusiveness**. Individuals within **heterarchy** tend to **protect** the system. Individuals within **hierarchy** often **ignore** the system, and sometimes even **attack** it. The **wholistic focus** of heterarchy is on the **needs** of the **whole** organization. This wholistic focus leads to **collective decision making** and **collective responsibility**.

Decision making in heterarchy is **slower**. It takes time to gain the consensus of all the individuals within the heterarchy. However, **implementation is much more rapid** because the attitudes of those responsible for implementation have been considered in the decision making process. This not only **eliminates conflict**, but also encourages **all**

members to feel **responsible** for the **successful implementation** of the decision. Anyone who has ever built a house knows it is much less expensive to erase lines on a paper, than to demolish mortar, brick, and stone.

As we focused more tightly, our discussions intensified, and to our mutual surprise we began to discover much agreement. **Both hierarchy and heterarchy** were emerging as **valid** strategies. They could both be seen to have major utility. They were very different, but equally valid methods of organizing. Heterarchy seemed better for meeting the needs of the whole system, while hierarchy seemed better for accomplishing the goals of the individuals within the system.

Heterarchy reduces conflict by seeking consensus. This appears to be the secret of its success. This is also why we see **slow decision making**, but **rapid implementation**. Hierarchy produces **rapid decision making**, but **slow implementation**. Individual **decision** making always occurs with minimal knowledge of the attitudes of those who will be responsible for implementation. This lack of awareness produces inevitable **conflict** which slows and limits the success of implementation.

Neither seemed universally superior, heterarchy worked best in some areas, but hierarchy clearly worked better in other areas. But despite our agreement, if our two positions were found to be equally valid, then which one should we use? Our discussion of heterarchy and hierarchy did not trigger the emotional reactions that discussing socialism and capitalism had, but we seemed no closer to our goal than we had the first day. Heterarchy and hierarchy seemed to be **exclusionary** as capitalism and socialism. It had to be *either* heterarchy *or* hierarchy, it could't be *both*.

Exhausted, we decided to break. Coulter invited me to take a walk along the lake that bordered his property. For some minutes we walked in silence, both of our minds grateful for the rest. Eventually, we reached a pleasant spot beside the lake and we sat down.

A few sailboats could be seen on the lake chasing the spring breeze. The scene was pleasantly reassuring, no sign of the troubled world that had prompted our quest for a new way for humankind. I thought of all the years I had been seeking a better way. It seemed so long ago that this journey had started. Even as a child, I had believed in a world without conflict. Coulter too seemed quietly sad, he too had been searching for a long time. His journey had begun even before my birth. I lay back and closed my eyes. The noise of the water gently lapping against the shoreline began to soothe my troubled mind.

Beyond Right & Wrong

Later, as we lay by the lake, Coulter told me of a powerful thinking tool he had developed:

“When I find I am confused, I test the idea by placing it in the following multiple-point-of-view rotary.

“The “idea” is right.

“The “idea” is wrong.

“The “idea” is neither right nor wrong.

“The “idea” is both right and wrong.

“First, I think of all the examples of when and where the idea is right, then of all the examples of when and where the idea is wrong. Then I look for examples where or when the idea doesn’t seem to apply, and finally I think of examples when the idea seems paradoxical — both right and wrong simultaneously. I have used this tool many times, and I have always understood the idea much better because of it.”

After resting a few more minutes we slowly walked back to his cabin. Following a break for supper, we resumed our discussions. We continued to learn from each other, but agreement seemed no nearer.

Alone, in my room preparing for bed, I took Coulter’s advice and jotted down his rotary.

Hierarchy is right.

Hierarchy is wrong.

Hierarchy is neither right nor wrong.

Hierarchy is both right and wrong.

Heterarchy is right.

Heterarchy is wrong.

Heterarchy is neither right nor wrong.

Heterarchy is both right and wrong.

As I lay down to sleep the rotary kept dancing in my head. Coming into our meeting, I had never felt so sure. How could so many things that seemed certain suddenly become so uncertain?

How could things be so right and so wrong all at the same time? What is the value of our science, if it can't answer our questions?

And tomorrow, was our last day.

Last Day

The third morning, we began our discussions on mind-brain science. This has been a primary focus of both Coulter's and my research for a number of years. Here we found an abundance of agreement. By midday we had reached a number of accords concerning human thinking. As we broke for lunch, we were pleased with this progress.

As this was scheduled to be our last day of meeting, we agreed to try for the ideal system once more after lunch. Coulter was still committed to heterarchy, but I had opened his eyes to hierarchy. Likewise my eyes were now open to heterarchy, although I still leaned toward hierarchy.

The night before I had completed outlining the operation of a hierarchy, so it was Coulter's turn to talk. Coulter began to describe his ideal heterarchical system in terms of decision making and project execution.

Coulter's voice modulated with excitement as he described the "**heterarchy with mission teams**". He had imagined a system of associates that were organized as a heterarchy. All members would sit on the same level as **equals**. No one would have more authority than anyone else. All problems and projects would be discussed at length in the heterarchy. All individuals would serve as information sources for each other, however participation was always voluntary.

Coulter leaned forward, "Now any individual would be free to declare a **mission**. Then other members of the heterarchy could examine the mission and participate on a **negotiated basis** in the creation of a mission team. If a declared mission found no voluntary allies, it would die for lack of support."

"What would be the **structure** of the mission teams?", I asked.

“The teams will be organized any way they like, remember it’s all voluntary. The individuals of the heterarchy will decide how they want to organize themselves, or even if they want to participate.

“Only those missions adequately supported by the heterarchy could occur. All involved would be voluntarily participating. Commitment would be 100% . When a mission was over the team would return to the heterarchy.”

“Could the mission team be a **hierarchy**?”, I asked.

EUREKA

Coulter paused momentarily stunned. He seemed deep in thought, then he relaxed with a sigh and responded, “I had never really thought about the structure of the mission team. Yes, I think you are right. **The structure of the mission team would be a hierarchy.**” He paused again, deep in thought, then continued, “**But with an important difference from many hierarchies because everything is voluntary.**”

I realized he was describing **negotiated hierarchy**, a powerful form of hierarchy that served a vital role in Galambos’s non-coercive capitalism. As Coulter continued talking, I saw the **heterarchy in my mind’s eye begin to move. First**, there was the **heterarchy**, then one member of the heterarchy **declared a mission**. The **heterarchy** suddenly **configures** itself into a **mission hierarchy** — a negotiated hierarchy. During the mission it functions as a hierarchy. Each member standing where he agreed to stand, performing those tasks he volunteered to perform. **The system was strongly self-organizing**. Once the **mission** was **completed**, the **hierarchy** was **abandoned** the members **return** to the **heterarchy**.

Heterarchy becoming hierarchy becoming heterarchy becoming hierarchy becoming heterarchy becoming hierarchy and on and on and on.....

The model danced in my head. Always a **heterarchy**, occasionally a **hierarchy**. The **heterarchy** was the **continuous pull — always pulling information**. The **hierarchy** a **discontinuous push — only occasionally pushing out a mission**. Coulter was describing a **tensegrity**. A **tensegrity** made up of **heterarchy** and **hierarchy**.

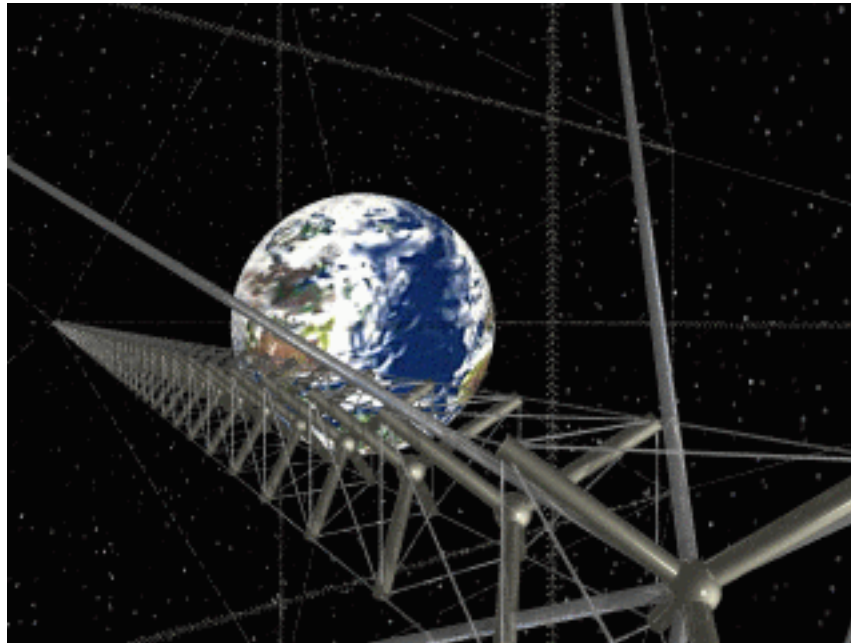
Hierarchy is both right and wrong.
Heterarchy is both right and wrong.
Hierarchy is neither right nor wrong.
Heterarchy is neither right nor wrong.

In a flash, Coulter and I had got what we were after. I had been blind to heterarchy and he to hierarchy. But there it was, both strategies in one system.

I had not come to North Carolina looking for tensegrities, and Coulter had never even heard of a tensegrity. And yet, his “heterarchy with mission teams” was in fact a **tensegrity** — a tensegrity with an equal balance of heterarchy and hierarchy.

There are no accidents in Nature and the tensegrity is no exception. This is the way we humans were meant to organize. Life’s most powerful organizing strategy for us is the organizational tensegrity. But, what is a tensegrity ?

Tensegrity



Buckminster Fuller studied Universe's organizing strategies for over fifty years. Of all the synergic patterns in Universe, **the most powerful one** he found was the **tensegrity**. Tensegrity is a contraction of the terms "tension" & "integrity". A tensegrity is a **balanced system** of **push** and **pull**.

Push & Pull

Tensegrity is the pattern that results when **push** and **pull** have a **win-win relationship** with each other. The **pull is continuous** and the **push is discontinuous**. The **continuous pull** is **balanced** by the **discontinuous push** producing an **integrity of tension — compression**.

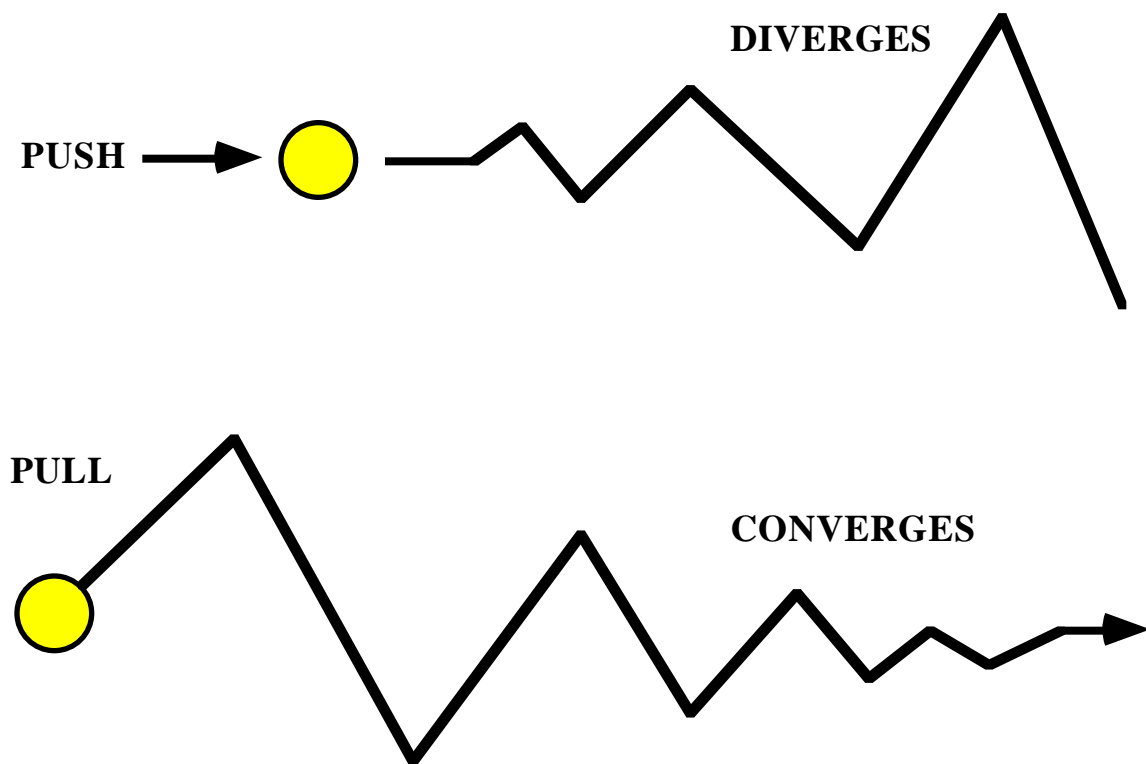
Push and pull seem so common and ordinary in our experience of life that we humans think little of these forces. Most of us assume they are simple opposites. In and out. Back and forth. Force directed in one direction or its opposite.



³ Illustration by Christopher Rywalt

Fuller explained that these fundamental phenomena were not opposites, but **compliments** that could always be found together. He further explained that **push** is **divergent** while **pull** is **convergent**.

Imagine pushing a yellow ping pong ball on a smooth table with the point of a sharp pencil. The ball would always roll away from the direction of the push, first rolling one way then the other. **Push is divergent**. Now imagine the difference, if you attach a string to the ping pong ball with tape, and pull it toward you. No matter how other forces might influence the ball to roll away from you, the string would always bring it to you more and more directly. **Pull is convergent**.



Another example from common experience occurs when we are pulling a trailer with our car. When I am driving uphill, I am pulling against gravity. The trailer converges nicely behind my car. If the trailer begins to sway, I can dampen it by increasing **pull** — simply increasing my acceleration. Now if I am driving downhill, the trailer may begin to **push**. This produces a strong side to side force — **divergence**. My trailer will begin to sway from side to side. **Push is divergent**. When the trailer begins to push us, experts advise us to accelerate our car in order to re-establish **pull**. **Pull is convergent**. The trailer will straighten out and we can congratulate ourselves for being good drivers. These then are the two always co-existing fundamentals of

Universe — **Push and Pull — Compression and Tension — Repulsion and Attraction.**



4

Tensegrity Discovered

In 1949, a student of Fuller's named **Kenneth Snelson** invented a unique mast — it was a structure composed of a single tension cable — continuous pull and many individual metal struts-discontinuous push.

It was a balanced system of push and pull and had characteristics of great strength and stability.

Donald Ingber, an associate professor of pathology at Harvard Medical School describes tension integrities or tensegrities:

"This type of structure was first constructed by the sculptor Kenneth Snelson. In Snelson's elegant sculptures, structural members that can bear only tension are distinct from those that bear compression. Even before one of these structures is subjected to an external force, all the structural members are already in tension or compression — that is, they are **prestressed**. Within the

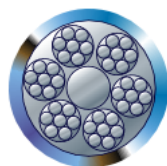
⁴ Color Photographs by Christopher Rywalt

structure, the compression-bearing rigid struts stretch, or tense, the flexible, tension-bearing members, while those tension-bearing members compress the rigid struts. These counteracting forces, which equilibrate throughout the structure, are what enable it to stabilize itself."⁵

Buckminster Fuller, the master of synergy science, at once set about examining his student's invention. Snelson's invention came to be called a tension integrity — which was shortened to "tensegrity". Fuller explained tensegrities were a class of structures, of which Snelson's invention was a single example. He went on to study this class of structures intensively. In his description of Snelson's invention, Fuller explained:

"The tensegrity mast functioned as a **system** being held in place by the **tension** within the single cable that was woven about the hundreds of metal **compression** struts to create a metal tower. All forces within the system are instantly and continuously distributed over the single cable to be loaded equally on all the struts. This makes a tensegrity enormously strong with no theoretical limit to structural height. The structure was wondrous to behold as from just a few feet back one couldn't see the cable and the metal struts seemed stacked on nothing rising into the sky without visible support.

"The tensegrity mast demonstrates the use of tension and compression within the same structure. Aluminum tubes, for example, are the compressive forces and are separated by thin metal wires which are all in tension. The continuous pull of the wires is resisted by the discontinuous tubes — **discontinuous compression/continuous tension** — illustrating **tensional integrity, or tensegrity.**" Fuller continued, "Structures built according to tensegrity theory become stronger as their size increases and could, theoretically, cover limitless areas — even the entire earth."⁶



⁵ Donald E. Ingber, The Architecture of Life, Scientific American Magazine, January 1998

⁶ R. Buckminster Fuller BUCKMINSTER FULLER—An Autobiographical Monologue/Scenario, 1980, ibid



R. Buckminster Fuller

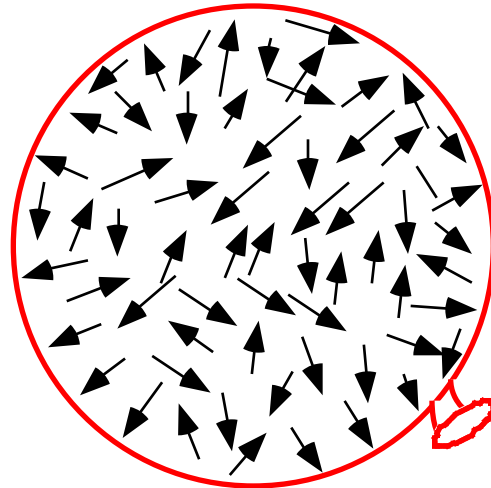


Tensegrity Theory Explained

A more common example of a **tensegrity** is a child's balloon. When we examine an inflated balloon as a system, we find that the rubber skin of the balloon **continuously pulls** while the individual molecules of air are **discontinuously pushing** against the inside of the balloon keeping it inflated. All external forces striking the external surface are immediately and continuously distributed over the entire system. This makes the balloon very strong. We all know how hard it is to break a good balloon with a blunt blow.

Molecules of air discontinuously pushing against the continuously pulling rubber skin of the balloon.

Tensegrity — a balance of continuous pull and discontinuous push.



The automobile tire is one of the strongest most durable inventions in the history of humankind. And few of us are aware that it is a tensegrity. It is the power of tensegrity in each tire that protects us from failure and blowout despite high speeds and long miles.

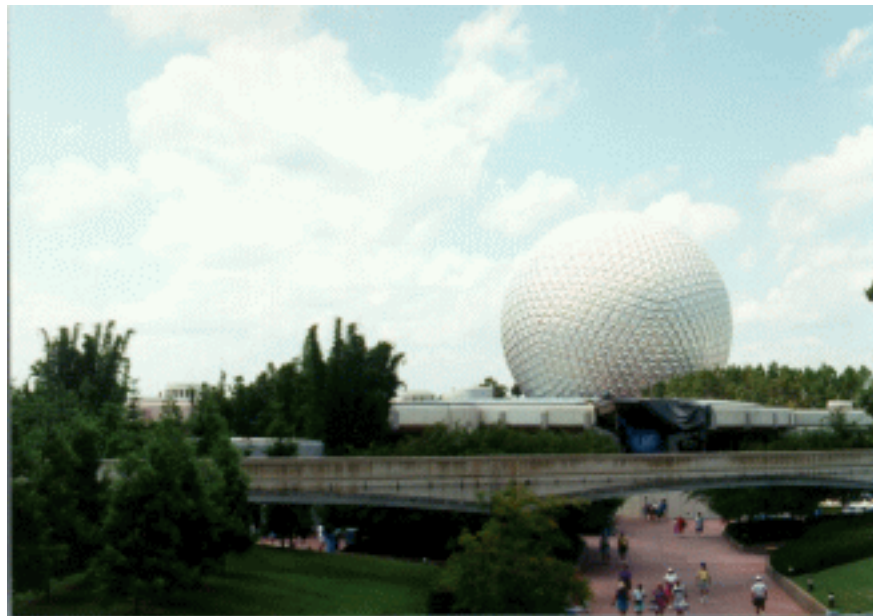
A **tensegrity** then is any balanced system composed of two elements — a **continuous pull** balanced by **discontinuous push**. When these two forces are in balance a stabilized system results that is **maximally** strong. The larger the system the stronger the system.

Most of humanity knows of Fuller's discovery of the Geodesic Dome, but few realize that geodesic domes are themselves tensegrities:

"The great structural systems of Universe are accomplished by islanded compression and omnicontinuous tension. Tensegrity is a contraction of tensional integrity structuring. **All geodesic domes are tensegrity structures, whether the tension-islanded compression differentiations are visible to the observer or not.** Tensegrity geodesic spheres do what they do because they have the properties of hydraulically or pneumatically inflated structures."⁷

We are all familiar with the geodesic dome at Disney World in Florida. The larger the tensegrity the stronger it is. Theoretically there is no limitation to the size of a tensegrity. Cities could be covered with geodesic domes

⁷ **R. Buckminster Fuller**, SYNERGETICS—Explorations in the Geometry of Thinking, Volumes I & II, New York, Macmillan Publishing Co, 1975, 1979



Planets could be contained within them. The only limiting factors are the amount of materials and the degree of our technologies. As **Donald Ingber** explains:

"Tensegrity structures are mechanically stable not because of the strength of individual members but because of the way the entire structure distributes and balances mechanical stresses. The geodesic domes of Buckminster Fuller, are basically frameworks made up of rigid struts, each of which can bear tension or compression. The struts that make up the framework are connected into triangles, pentagons or hexagons, and each strut is oriented so as to constrain each joint to a fixed position, thereby assuring the stability of the whole structure.

"Tensegrity structures share one critical feature, which is that tension is continuously transmitted across all structural members. In other words, an increase in tension in one of the members results in increased tension in members throughout the structure — even ones on the opposite side. This global increase in tension is balanced by an increase in compression within certain members spaced throughout the structure. In this way, the structure stabilizes itself through a mechanism that Fuller described as continuous tension and local compression. In contrast, most buildings derive their stability from continuous compression because of the force of gravity.

"The tension-bearing members in these structures — whether Fuller's domes or Snelson's sculptures — map out the shortest paths between adjacent members (and are therefore, by definition, arranged geodesically) Tensional forces naturally transmit themselves over the shortest distance between two points, so the members of a tensegrity structure are precisely positioned to best withstand stress. For this reason, tensegrity structures offer a maximum amount of strength for a given amount of building material."⁸



Life

The organizational pattern called tensegrity appears to be life's primary organizing tool. This is the pattern that allows win-win relationships between the parts of the whole system. **Donald Ingber** continues with my annotations in **color**:

"Life is the ultimate example of complexity at work. An organism, whether it is a bacterium or a baboon, develops through an incredibly complex series of interactions involving a vast number of different components. These components, or subsystems, are themselves made up of smaller molecular components, which independently exhibit their own dynamic behavior, such

⁸ **Donald E. Ingber**, The Architecture of Life, Scientific American Magazine, January 1998

as the ability to catalyze chemical reactions. Yet when they are combined into some larger functioning unit — such as a cell or tissue — utterly new and unpredictable properties emerge, including the ability to move, to change shape and to grow.

"Although researchers have recognized this intriguing fact for some time, most discount it in their quest to explain life's fundamentals. For the past several decades, biologists have attempted to advance our understanding of how the human body works by defining the properties of life's critical materials and molecules, such as DNA, the stuff of genes. Indeed, biologists are now striving to identify every gene in the complete set, known as the genome, that every human being carries. Because genes are the "blueprints" for the key molecules of life, such as proteins, this Holy Grail of molecular biology will lead in the near future to a catalogue of essentially all the molecules from which a human is created. Understanding what the parts of a complex machine are made of, however, does little to explain how the whole system works, regardless of whether the complex system is a combustion engine or a cell. In other words, identifying and describing the molecular puzzle pieces will do little if we do not understand the rules for their assembly.

"That nature applies common assembly rules is implied by the recurrence — at scales from the molecular to the macroscopic — of certain patterns, such as spirals, pentagons and triangulated forms. These patterns appear in structures ranging from highly regular crystals to relatively irregular proteins and in organisms as diverse as viruses, plankton and humans. After all, both organic and inorganic matter are made of the same building blocks: atoms of carbon, hydrogen, oxygen, nitrogen and phosphorus. The only difference is how the atoms are arranged in three-dimensional space.

"This phenomenon, in which components join together to form larger, stable structures having new properties that could not have been predicted from the characteristics of their individual parts, is known as "self-assembly" (**synergy**). It is observed at many scales in nature. In the human body, for example, large molecules self-assemble (**synergize**) into cellular components known as organelles, which self-assemble (**synergize**) into cells, which self-assemble (**synergize**) into tissues, which self-assemble (**synergize**) into organs. The result is a body organized hierarchically as tiers of systems within systems. Thus, if we are to understand fully the way living creatures

form and function, we need to uncover these basic principles that guide biological organization.

"Despite centuries of study, researchers still know relatively little about the forces that guide atoms to self-assemble (**synergize**) into molecules. They know even less about how groups of molecules join together to create living cells and tissues. Over the past two decades, however, I have discovered and explored an intriguing and seemingly fundamental aspect of self-assembly (**synergy**). An astoundingly wide variety of natural systems, including carbon atoms, water molecules, proteins, viruses, cells, tissues and even humans and other living creatures, are constructed using a common form of architecture known as tensegrity. The term refers to a system that stabilizes itself mechanically because of the way in which tensional and compressive forces are distributed and balanced within the structure.

"This fundamental finding could one day have practical applications in many areas. For example, new understanding of tensegrity at the cellular level has allowed us to comprehend better how cellular shape and mechanical forces — such as pressure in blood vessels or compression in bone — influence the activities of genes. At the same time, deeper understanding of natural rules of self-assembly (**synergy**) will allow us to make better use — in applications ranging from drug design to tissue engineering — of the rapidly accumulating data we have about molecules, cells and other biological components. An explanation of why tensegrity is so ubiquitous in nature may also provide new insight into the very forces that drive biological organization — and perhaps into evolution itself.

"My interest in tensegrity dates back to my undergraduate years in the mid-1970s at Yale University. There my studies of cell biology and also of sculpture led me to realize that the question of how living things form has less to do with chemical composition than with architecture. The molecules and cells that form our tissues are continually removed and replaced; it is the maintenance of pattern and architecture, I reasoned, that we call life."⁹

⁹ Donald E. Ingber, The Architecture of Life, ibid

Life Tensegrities

I was unaware of Dr. Ingber's work until his article was published in Scientific American in January of 1998.

My own search for tensegrities began in 1980. I was working intensively in the area of human relationship problems. I was highly interested in synergy science especially as it applied to human organization. I had sought out the works of Fuller, and there learned of the wonderful organizing strategy he called tensegrity. I intuitively felt, he had discovered something really important and I began to look for tensegrities in my own area of study.

I was quite familiar with Korzybski's definitions of Energy-binders, Space-binders, and Time-binders. So I examined the three classes of life looking for tensegrities.

Plants — the energy-binders have their primary relationship with the sun. Their leaves are **continuous pulling** as they collect solar energy from the sky, but with the rotation of the earth and changes in the weather the sun only **discontinuously pushes** its radiation on to the leaves.

• **Photosynthesis-Radiation** is the **energy-binder tensegrity**.

Animals — the space-binders are usually fighting or fleeing. They are generally limited to two roles either as prey or as predator. The prey animals are **continuous pulling** predators to them. While the predators are only occasionally hungry. They **discontinuously push** out seeking the occasional kill. Prey and predator must be in balance to stabilize the ecosystem. The larger the ecosystem the more stable it is.

• **Prey-Predator** is the **space-binder tensegrity**.

Humans — or time-binders have the power of understanding. We develop understanding through education. The two roles of humans can then be seen to be Student and Teacher. I am continuously learning — **continuously pulling** in new information, but I am only occasionally teaching — **discontinuously pushing** out information to someone else.

• **Student-Teacher** then is the **time-binding tensegrity**.

If we examine the three classes of life from the viewpoint of their relationships with each other, we can see that:

Plants as the **independent** class of life have no relationship with each other. They mostly **ignore** each other and form no tensegrity.

Animals as the **dependent** class of life have a negative relationship with each other. They form an adversary tensegrity where the prey is continuously at risk of being **hurt** and the predator is discontinuously **hurting** other.

Humans as the **interdependent** class of life can have positive relationships with each other. We can form a synergic tensegrity where we are continuously being **helped** and discontinuously **helping** other.

Other Biological Tensegrities

As I turned my attention to the human body, I expected that the human body would be discovered to be a tensegrity of tensegrities.

I recognized two other **tensegrities**, which are systems of the human body. The **muscle-skeletal system** is a **tensegrity** of muscle and bone, the muscle provides **continuous pull**, the bones **discontinuous push**. The forces between the bones and muscles are held in constant balance. This forms the basis for all of our physical mobility.

The central nervous system also functions as a tensegrity. The **sensory-motor system** is a tensegrity of sensory neurons and motor neurons. The sensory neurons always sensing information — **continuously pulling** and the motor neurons only occasionally involved in some motor action — **discontinuously pushing**.

Recall that I began this book with a discussion of Needs and Actions. **Needs** are **continuously pulling** on me as a living organism to be met. To meet my needs, I must take action. Fourteen to Sixteen times a minute, I take a breath. Many times a day, I drink water. And two or three times a day, I eat food. My **actions** are **discontinuous pushing** out to meet those needs. Discontinuous means I have some control over when I act to meet my needs. I can eat now or a few hours from now. **Life** can be described then as the process of **continuous needs** being met by **discontinuous actions**.

And, one of my students, Leann Roberts recognized that our sexual roles as Female and Male could also be considered as a tensegrity. The **female** was **continuously** making herself **attractive** to pull on her male, but the **male** was only occasionally interested and **discontinually pushing** towards her for attention.

I expect as Fuller predicted that we will be discovering tensegrities for many years to come.

*Heterarcy*¹⁹⁸³

Answers from the East

Upon returning to California, I had a new focus. I knew a lot about Capitalism most of which I had learned as a student of Andrew J. Galambos. I was very clear about hierarchy. But I was a novice when it came to heterarchy. I immediately sent out to find out as much about heterarchy as I could. At this time, the best business organizations in the world were to be found in Japan. And, I soon discovered the secret of their success was their mastery of heterarchy.¹⁰

Japan, Inc.

In 1983, the major success of **Japan, Inc.** has served to focus international attention on **ways** of doing business. The Japanese were employing organizing strategies that produced the highest productivity and quality of work-life in the industrial world.

Their success appeared to threaten the viability of many American corporations. This threat has leading to the careful examination of the Japanese way by numerous individuals.

Their findings revealed the **major focus** of the **Japanese** was **long-term** and **wholistic**. This was in striking contrast to most **American corporations** where the focus was **short-term** and **particulate**.

As the world's business corporations sought to compete and survive in the late 70s and early 80s, they sought the most powerful organizing strategies available. **Who would be right — the Japanese, or the Americans?**

Should businesses have **wholistic concerns** or **particulate concerns**? Did the recent major success of the Japanese prove they had the right system?

¹⁰ Today, Japan has fallen on hard times. Her critics would like to think that is because the American way is better. This is not the case. Those who can afford to buy new products are oversaturated. How many televisions, stereos, and computers do you need in your house. Then there is the **Fossil Fuel Depetion-Overpopulation Crisis** which is even now (February 2002) impacting the United States and rest of the World Economies. The entire world is running out of **cheap energy**. But that is another story.

What about **innovation, creativity, and originality**? How do they fare under the Japanese way? Many American business leaders were forced to decide without really being able to predict the effect of their decisions.

William Ouchi¹¹ contrasted the American and the Japanese ways in the following chart.

<i>Japanese</i>	<i>American</i>
Wholistic Concern	Particulate Concern
Collective Decision Making	Individual Decision Making
Collective Responsibility	Individual Responsibility
Implicit Control Mechanisms	Explicit Control Mechanisms
Lifetime Employment	Short-term Employment
Non-Specialized Career Paths	Specialized Career Paths
Slow Evaluation & Promotion	Rapid Evaluation & Promotion

Economic Survival

And how long could American businesses afford to wait before deciding? Ouchi said, “it takes a minimum of two years to convert to a **type z company**, and some companies might require four or six years to see effects.”

The success of the Japanese could be explained by **synergic system analysis**. As I examined the two ways from the point of view of synergy science, I discovered the American way was dominated by **hierarchy**, while the Japanese way was heavily influenced by the **heterarchy**.

Other-Directed Management

Nearly all of America’s businesses employed **other-directed management**. Other-directed management is when “A” tells “B” **what to do**, and often **how** to do it as well.

Recall that **hierarchy** is a **vertical system** with many levels of organization. Those with

¹¹ William Ouchi, THEORY Z, Addison-Wesley Publishing Company, Inc., Phillipines, 1981

greatest responsibility and authority occupy the higher levels. **Hierarchy creates a feeling of difference or individuality.** Individuals within the system see each other vertically, “He is over me.” “I work under John.” “He is way up in the company” “She is the lowest one on the totem pole.” All too often individuals within a hierarchy experience feelings of **inferiority**. This is not surprising in a system based on **superior** and **inferior levels**. In humans, **feelings of inferiority** produce **hostility**. In the **jungle**, being **inferior** was often synonymous with **death**.

This **adversary reality** was also experienced in the **cave**, and the **tribe**, and the **feudal state** , and is experienced in nearly all the **corporations, institutions, governments, and militaries of earth**.

Recent mind-brain science reveals that **hostility** produces a ‘down shift’ within the human mind to a very primitive mode of thinking — the **SURVIVE MODE**. This “mode of thinking” originated in the jungle, and is the master of **fighting** and **fleeing**.

Since the inception of **hierarchy** its constant companion has always been **conflict**. This now seems to be its primary limitation. One significant contributor to conflict is other-directed management.

Some corporations are seeking to move away from **other-directed** management through use of “delegation of responsibility”. Here, managers are still told **what** to do, but not **how** to do it. They have more freedom to **self-direct**. But even within systems with “delegation of responsibility”, the price of failure is usually termination or at the very least stagnation of ones career. This produces **fear** of failure with resultant conflict.

Conflict — Preparing to Fight or Flight

The **SURVIVE MODE** of the human mind is the real “**king**” of the jungle. We humans are clearly the dominate form of life on this planet. We have successfully fought and fled our way from the African savannah to the top of the modern corporate board room.

The **survive mode** is quite effective for physical **conflict**, with its extremes of **rage** and **terror**, but highly ineffective within modern organizations. The **survive mode** is our most primitive way of thinking. It was for survival emergencies in the jungle. Humans thinking in this mode are highly **inefficient** and **non-productive**, they lose access to almost all of what we call “human intelligence”. Any conflict can produce hostility within a human, and hostility always shifts humans into the **survive mode**.

Synergy science has identified **conflict** as the major **obstacle** to **efficiency, productivity, and quality of work-life** within all organizations. While **Hierarchy** clearly has some major **strengths**, its problems with conflict create the greatest of liabilities. If human organizations are to survive into the 21st century, it is crucial that **conflict be eliminated**.

$$\frac{\text{conflict}}{\text{organizations}} : \frac{\text{friction}}{\text{machinery}}$$

Synergic system analysis reveals that the **major secret** of the **Japanese way** is the **reduction of conflict** they have achieved within their organizations.

Synergy Increases Efficiency

Synergic system analysis reveals that **efficiency within a system** is a **direct variable** of the **type of relationship** that exists between the parts that make up the whole system.

In other words, it is **how** these parts **relate** with one another that will **absolutely determine** the **success** of the **whole** system.

Recall that adversary relationships are bad for me, bad for you, or bad for both of us.

Neutral relationships have no effect on you or me. But synergic relationships are good for you and good for me — **WIN-WIN**.

The **synergic relationship maximizes efficiency**. Neutral relationships significantly limit efficiency, and adversary relationships allow no possibility of efficiency.

Synergy science reveals that **conflict** is an **indirect variable** of **efficiency, productivity, and quality of work-life**. Using **win-win relationships** within organization is like applying **grease** to **machinery**.

It is by making win-win relationships that we will form systems in which the **sum of the whole system** is **much more** than the **sum of the parts**. This “**much more**” results in what Haskell called the **cooperator’s reward**.

If we humans desire a share of the **cooperator’s reward**, then, **we must learn to create win-win relationships** between all the individuals within our organizations and to reduce conflict where ever we may find it.

Eliminating Conflict

I pause here to mention one apparently different point of view. Recently some business writers have been singing the praises of conflict. They advise “managers” to learn to **creatively manage conflict**, rather than to try to eliminate it.

However a closer examination reveals that these business writer’s define “managing conflict” as creating “**win-win** relationships”. Whereas synergy science defines the creation of “**win-win** relationships” as “eliminating conflict”. So whether we refer to the creation of “win-win relationships” **as** “eliminating conflict” **or** as simply “managing conflict”, we would all agree, it is **good** to create **win-win** relationships.

The Japanese clearly have some cultural advantages in creating **win-win** relationships. First of all, they are a very crowded people with over a hundred million individuals living within a geographic area no larger than a single one of our states. This crowding has produces a strong force toward a cooperative life style, and the Japanese do strongly seek consensus. They also are the only nation to have experienced nuclear war, this resulted in a people deeply committed to the **cooperative** way.

Some Americans seem to want to **explain away** the Japanese success by pointing to obscure genetic and cultural differences, as if in so doing they will somehow invalidate the Japanese success. Their success will not be invalidated. The Japanese success results not from obscure genetic and cultural traits, but from simply **reducing the conflict** within their organizations.

And the **most powerful strategy** presently known for **reducing conflict** is **heterarchy**.

The Japanese Way

The Japanese **reduce conflict** by using **heterarchy** in their systems. In many ways, the basic structure of Japanese business appears no less hierarchical than our own. However, the Japanese have introduced **heterarchy** into their systems in at least three **significant** forms.

First of all, the Japanese use “**quality circles**”. Management and workers all sit at the same level in advisory “heterarchies”. This allows the managers to be very aware of the attitudes of those who will be implementing decisions. Conflict can be discovered and eliminated effectively within the heterarchy. All participants of “**quality circles**” feel they are on a full and equal basis to discuss problems and recommend changes.

Secondly, while much of the Japanese work day is spent in hierarchical organization not

unlike Americans, the Japanese business day does not end at 5 pm. The **mandatory socializing** which occurs every night after work is structured as **heterarchy**. This provides another opportunity to reduce conflict and many business decisions are made in this social setting.

And **thirdly**, while hierarchy prevails in terms of organizational responsibility, the **Japanese manager** adopts a more **open heterarchical style**. He welcomes his worker's inputs, and encourages them to participate in the decision making process.

This is a move away from **other-directed management** towards more **self-directed management**. This is accompanied by an almost instantaneous decrease in **conflict**.

If we are to learn anything from the Japanese, it should be that reduction of **conflict** always produces a significant increase in efficiency, productivity, and quality of work-life.

My study of Japanese business opened my eyes to the power of heterarchy. It is now obvious that all human organizations must master **the power of the heterarchy**. However, **hierarchy** is not the villain in this story. For American businesses to throw out hierarchy in a rush to embrace the Japanese way could be a worse mistake than to make no change at all. American businesses are the masters at hierarchy, and here the Japanese can learn something from them.

The discovery of the Organizational Tensegrity reveals that human organizations require a system of organization that transcends both heterarchy and hierarchy.

At one and the same time the Organizational Tensegrity is neither a heterarchy nor a hierarchy, and simultaneously it is both a heterarchy and a hierarchy. There is a third alternative to either heterarchy or hierarchy.

The synergic way produces win-win relationships between all members of the system by transcending both heterarchy and hierarchy. This is the mechanism that allows the Organizational Tensegrity to eliminate all internal conflict.

Both-And

The Organizational Tensegrity can then be defined as that “complex organizational system that creates a balance of both heterarchy and hierarchy to produce win-win relationships among all members of the system and simultaneously eliminate all internal conflict”.

Synergy science teaches us the both-and point of view. Systems are not wholes. Systems are

not parts. Systems are both wholes and parts. A human organization is not just a community, it is not just the individuals within the community. A human organization is both a community and the individuals within that community. We humans are usually misled by our great propensity to “either/or” thinking. This is not a question of “either heterarchy or hierarchy”.

An Organizational Tensegrity is highly flexible being able to move between heterarchy and hierarchy easily and frequently. This ability of the organizational tensegrity, to instantly shift between these two strategies, allows it to gain the strengths of both while avoiding their weaknesses altogether.

Heterarchy is best able to provide the needs of the whole — the needs of community, while hierarchy is best able to meet the goals of the parts — the goals of the individuals. And the win-win relationship serves as the binding that holds the system together.

Which way for Humanity? We humans find ourselves once again at the crossroads, which way shall we choose?

I believe our future does not lie in the Japanese way of heterarchy, nor in the American way of hierarchy. I believe it lies in the third alternative — the synergic way of the Organizational Tensegrity. In the years that have passed since I first described the organizational tensegrity, I have contracted the term to simply **Ortegrity**.

Defining Ortegrity

Introduction

Life's pattern of organization is the tensegrity, it has been in use on earth for over three and one half billion years. The tensegrity is the basis of organizing all living systems including our own bodies. Up until now we humans have not understood the mechanism and therefore could not use this pattern to organize our marriages, our businesses, our organizations and institutions, our communities, or even the entire human species.

Humans who organize themselves using the pattern of tensegrity will find themselves orders of magnitude more efficient, more productive, more creative, more intelligent. More importantly they will be much more successful in pursuing their goals and desires

Within this half century, we humans have developed ergometric science to help us improve our tool-making. Ergometric scientists tell us how to best design tools to fit the human form. By carefully measuring both the physiology and psychology of the human body, today's scientists are seeking to determine the best designs for new tools. They know that the best tools are those that fit you like a well-tailored glove fits your hand.

Recently ergometric science has been much advanced by a breakthrough in our understanding of human intelligence. With the development of the "dual mind" model of human intelligence it is now possible to design tools that fit the human "mind-brain". In other words, we can now ergometrically engineer tools to fit the way we humans think.

We humans are the toolmakers, and in our history we have made many tools — both simple and complex. The most complex and complicated of all our tools are our organizations — the corporations, institutions, militaries, and governments of earth. These are also the most important tools in all our lives, for they significantly influence both the quality and quantity of our lives. Of all the tools we might seek to ergometrically engineer to fit the human "mind-brain", there exists no greater potential benefit for all humankind then by applying this science to our most complex tools — our human organizations.

One such tool has recently completed development, and is now available to organizations for immediate application. This first ergometrically designed tool for human organizations is called the Ortegrity. The Ortegrity is a "mind-brain" compatible system

of organizing humans. It can be used by a small group of individuals or a giant corporation with hundreds of thousands of employees.

The Ortegrity is a “system of human organization that creates a conflict-free environment for decision making and action implementation”. This is an environment so ergonomically suited to human thinking that efficiency and productivity are predicted to increase 10 to 1000 times. Yes, that is 10 to 1000 times more efficient and productive.

The Ortegrity achieves its great power by creating an ideal psychological environment for human thinking. One important finding of recent mind-brain research, is “that whenever humans experience conflict they lose access to their full intelligence”. When humans are confronted with conflict, their mind-brains shift to a very primitive and highly reactive way of thinking called the survive mode. The survive mode evolved in the jungle to insure physical survival. Its primary skills are fighting and fleeing. Its extremes are rage and terror. All humans thinking in the survive mode will find their intelligence to be severely limited. Access is lost to the faculties of reason and intuition. In severe conflict, many of us lose even our ability to speak. Unfortunately, the survive mode turns on with the slightest conflict, and instantaneously our intelligence begins to decrease. It is not simply on or off. It is more like the rheostat dimmer switch controlling a dinning room light. A little conflict will produce a little loss of intelligence, while a large conflict will produce a large loss of intelligence. If we remain in conflict for weeks, then we will operate at limited intelligence for weeks. And in full rage or terror, we humans access only a tiny fraction of our potential intelligence. Conflict is to organizations as friction is to machinery.

The power of the Ortegrity results then from its unique ability to create a conflict-free state. It is this conflict-free state that optimizes human intelligence and creativity. It is this conflict-free state that maximizes efficiency and productivity. It is this conflict-free state that increases the quality of work-life. It is the conflict-free state that allows all relationships between all members to become win-win.

In the difficult political-economic times ahead, organizations must learn to work smarter. Only by optimizing the human factor can they hope to survive. The Ortegrity promises to increase efficiency and productivity by 10 to 1000 times. It accomplishes this by increasing the intelligence and creativity of all members in the system. This is working “smartest”. The Ortegrity was designed to fit the human “mind-brain” like a well tailored glove fits your hand, it could change the way we all work and live in the future.

When living systems — the plants, the animals, and our own human bodies are compared to the best of man-made systems — the corporations, the institutions, our governments and militaries, Living systems are found to be one to three orders of magnitude more efficient and productive. By utilizing the Ortegrity, it appears possible to restructure human organizations so they are ten to one thousand times more efficient and productive.

Synergic Consensus

Synergic consensus is a much more powerful mechanism of decision than the majority rule of present day committees. All decisions with an Ortegrity system are made within Decision Heterarchy. A decision heterarchy is made up of a group of humans with common purpose. The minimum number is 2 the maximum number is presently unknown. I believe the ideal size may be ~six or seven individuals. The group is organized horizontally with all individuals sharing equal authority and equal responsibility.

We humans are most familiar with the committee system. It is very different than the Heterarchy. While they are both methods of organizing human individuals to make decisions for group action. Committees are filled with conflict and highly ineffective. In a committee no individual is held responsible for the actions taken by the group. And decision is made by majority ultimatum. A desenting minority member can support the action he voted against or leave the committee. Heterarchy of the Ortegrity, in contrast organizes individuals to have equal authority to decide on joint action with equal responsibility for the resultant that is produced by that action.

Synergic consensus occurs when a group of humans sitting in heterarchy negotiate to reach a decision in which they all win and in which no one loses. In a synergic heterarchy, all members sit on the same level as “equals”. No one has more authority than anyone else. Every one has equal responsibility and equal authority within the heterarchy. The assignment for the heterarchy is to find a plan of action so that all members win. It is the collective responsibility of the entire heterarchy to find this “best” solution. Anyone can propose a plan to accomplish the needs of the group. All problems related to accomplishing the needs would be discussed at length in the heterarchy.

The proposed action for solving a problem is examined by all members of the heterarchy. Anyone can suggest a modification, or even an alternative action to solve the problem. All members of the heterarchy serve as information sources for each other. The heterarchy continues in discussion until a plan of action is found that will work for everyone. When all are in agreement and only then can the plan be implemented. The plan insures that all members of the synergic heterarchy win. All members are required to veto any plan where

they or anyone else would lose. But all vetoes are immediately followed by renegotiation to modify the plan so the loss can be eliminated.

Unanimous Consensus

Synergic consensus is unanimous consensus. I can hear the objections now. “That’s impossible, you will never get everyone in the group to agree.” “Decisions will never get made.” “It is hard enough to get a majority to agree.”

A Japanese business heterarchy is slower at making decisions than a single manager in an American business hierarchy. It takes longer for a group of individuals to discuss, negotiate, and come to agreement than it takes for a single American manager to decide all by himself. If the speed of making decisions is the only criteria for choosing a mechanism of decision making then the business tyrant — the rule by one is the clear standout.

However, the Japanese have shown us the disadvantages of other directed hierarchies. Majority rule committee is not a rapid decision making process. Individuals within a committee are seeking to gain the majority of support. This takes time — sometimes a lot of time. The focus is on lining up votes — working deals — in a word — politics. This process is anything but rapid. If all decisions in American businesses were made by majority rule, decision making would probably be even slower than in Japanese companies using heterarchical consensus.

Synergic consensus is only now becoming available to humanity. We do not yet know how fast it will be at making decisions. But, I predict that decision making by synergic consensus will prove faster than decision making by majority rule. Synergic consensus eliminates conflict. Recall conflict is the struggle to avoid loss. Conflict is at the very heart of majority rule decision making. The focus of synergic consensus is very different. The entire group knows from the outset that they cannot lose. They are focused on choosing a plan of action that serves the needs of all the members in the group — to choose a plan of action that causes no one to lose. The synergic veto is not invoked capriciously. The only basis for synergic veto is to prevent someone from losing. This is a mechanism to eliminate loss — to choose the very best plan of action for everyone. This may well speed up the process of decision making. In any event regardless of the speed of decision, implementation will be rapid. There is no conflict. This is a major advantage.

The Synergic Veto

Synergic Mechanism accepts the Neutral value — To Prohibit Loss. Those humans using synergic mechanism desire just as strongly as those using neutral mechanism not to lose,

but synergic mechanism is more. Both parties need to win. Let us recall our basic definition,

CO-OPERATION — def — > Operating together to insure that both parties win and that neither party loses. The negotiation to insure that both parties are helped and neither party is hurt.

Co-Operation is the mechanism of action necessary whenever an individual desires to accomplish a task beyond his individual abilities. Imagine, you and a friend are moving a heavy piece of furniture. Neither of you are strong enough to move the furniture by yourself. You decide to co-operate — You decide to operate together during the lifting. You would negotiate to insure the win — to insure being helped.

The conversation might go like this: “Are you ready?” “Ok.” “Ready, 1.. 2.. 3.. lift!” and if things are going well that is fine, but if one end gets too heavy then Synergic Co-Operation prohibits loss... “Whoops! Set it down.” This is the **synergic veto**.

This is the true meaning of co-Operation — the negotiation to insure that both individuals win. And the synergic veto to stop the action if either party is losing. Losing is the only valid use for synergic veto. All synergists are required to immediately veto any action in which they or anyone else would be harmed — any action in which they or anyone else would lose.

No-win Scenarios

Remember, even when you use synergic mechanism you can’t always win. There will times when the constraints facing a synergic group are such that loss is unavoidable. Synergic mechanism strives to make this a rare situation, but loss will occur. If you can’t find a win-win scenario to clear a synergic veto, then synergic mechanism dictates the group must admit and accept the inevitability of loss. When a No-Win situation occurs, the synergic group shifts its focus to finding that action or solution that will minimize the loss. And then, whatever the loss is, it must be shared equally.

In synergy, we are one. In synergy are equal. In synergy we strive to win together. But if we are forced to lose, then we will lose together — this means we will all share equally in the loss.

Synergic Equality

The basic unit of synergic organization is a synergic group organized as heterarchy. All members of a synergic heterarchy are equal. They share equal responsibility for the actions chosen by the group. They share equal authority in the process of choosing those actions. When individuals work together in synergic relationship to accomplish a common goal. They are considered as a single system.

When individuals work together in synergic relationship, new abilities, skills, talents, etc., emerge as a part of that relationship, that are not there when the individuals work separately. The individuals working in synergic group are more efficient, more productive, more creative, and more intelligent, than they are when working separately. The result of their synergy is that they create “more” together than they could create apart. This “more” is Haskell’s “Co-Operators’ surplus”.

When individuals work together in synergic relationship, they equally contribute to the synergic emergents, and will share equally in the Co-Operators’ surplus. Haskell’s “Co-Operators Surplus” is property and it is owned equally by all who synergized within the synergic group to create it. Within a synergic group all members commit to the **Six Tenets of Synergic Equality**.

- 1) In synergy, I am ONE with my associates.
- 2) In synergy, I am MORE with my associates than by myself.
- 3) In synergy, I am EQUAL to all my associates.
- 4) In synergy when we WIN, I will win MORE with my associates than by myself and I will share equally in the GAINS.
- 5) In synergy, when we LOSE, I will lose LESS with my associates than by myself and I will share equally in the LOSSES.
- 6) In synergy, we will win together or lose together, but we are TOGETHER.

SYNERGY — Working Together

In synergic relationship individuals continue negotiating to insure the win, In synergic relationship, all players are focused on winning. Everyone is seeking help. The game calls for only winners, there is no need for loss. Each player is expected and encouraged to veto any suggested plan wherein they would lose. It is of primary importance in synergic

relationship to veto all loss positions. Failure to do so instantly shifts the relationship back to adversary, with the immediate return of conflict. In contrast, since there are no losers in synergic relationships, there is also no conflict. And because obtaining help by helping others attracts the highest quality help, real winners seek synergic help. Seek always synergic help by making sure that those who help you also win. Be sure they understand how their helping you will also help them. Use the following approach to help you succeed.

Whenever you encounter conflict in a potential helper, they are struggling to avoid loss. This means they believe they will lose by helping you.

- 1) Analyze the relationship, if your potential helper is really losing, then modify the plan so they will win. To proceed without modifying your plan will only continue conflict and get you only the lowest quality help.
- 2) If the potential helper simply misunderstands, and in fact he really does win, then explain why he misunderstands, or fill in the information as to how he wins. When he knows he will win by helping you — he will immediately seek co-Operation.

TRUSTING — Synergic Attitude

The most powerful strategy one can use in our present world then is to seek synergic relationship. But survival requires you to avoid individuals committed to adversary relationships. They too, are seeking to make you help them — the adversary way needs losers.

Synergists are sometimes mistaken by adversary players as weak adversaries. This is not the case. A good synergist immediately notices any loss, and will seek co-operation. If relationship where both parties win cannot be negotiated, then the synergist will break off a relationship with the committed adversary.

Synergists don't fight or flight; they communicate and negotiate. They understand to fight or flight is to abandon the synergic way for instant conflict — for instant hurt — for instant loss. The synergic individual desires always to win. He seeks synergic relationship to increase his chances of winning.

Anytime, the synergist is not winning, he seeks to renegotiate. If he is unable to co-Operate,

he chooses not to conflict. He simply ends the relationship with the least possible loss. He lives the attitude of the good synergist. I am a helper, and therefore I will help you, and trust you to help me. I will seek to help all my fellow humans, but my resources are limited, and in the long run, I must help those who help me.

Avoiding Ultimatums

Ultimatum is an adversary condition when the stronger forces the weaker to lose. This can occur between two individuals or between two nations. For example, let us assume that two individuals decide to help each other — that is they decide to work together — to form an “**us**”. These individuals will discover their individual preferences are constrained by their joint life. Because they share resources, they can't both live in their favorite city, or in their favorite house, or own their favorite automobile, unless by chance they have identical favorites. The “**us**” is formed to gain the power and advantage of **interdependence**. Interdependence's “division of labor” improves the standard of living for both, but the price for the higher standard of living is that the choices of both individuals are constrained by the needs and wants of the other.

In the adversary relationships, we experience this constraint as the **ultimatum**. The ultimatum is an opportunity to lose. You can **lose-a-little** or you can **lose-a-lot**, but you will lose.

Imagine, a husband comes home from work. He says to his wife,

“Well, I lost my job today. I have had it with the bay area. We are going to move to Los Angeles, there are good jobs there.” His wife counters, “But, I don't like Los Angeles. The kids and I will lose, if we have to move to Los Angeles.” The husband plays the trump card. “Well you can either go to Los Angeles or you can get a divorce. Its up to you, but I'm moving to L.A.”

Which do you want? — a broken arm or a broken leg? Your choice is between losing-a-little by moving to a community you don't like, or losing-a-lot by getting a divorce, but you are going to lose.

Seeking Bindings

Now constraint is placed on any group of individuals who choose to live or work together. This is a law of physics. Constraint does not go away in the synergic relationship. But it remains only a constraint, and not a compromise. In synergic relationship, you are never

forced to lose. You, in fact, are encouraged and expected to veto all losses. The only path the two of you agree to walk is one in which you both win. In synergic relationship there is no loss. You may **win-a-lot** or you may **win-a-little**, but **you will win**.

The synergic alternative to the ultimatum is called the **binding**. It is the contract that results from the negotiation to insure the win — co-Operation. It is the contract establishing a relationship in which you both win in which you both are helped.

Imagine, our husband coming home who enjoys synergic relationship with his wife. “Honey, I got laid off today, I have really had it with the bay area. I just can’t stay here anymore. I feel like I’m losing.” “Well, where do you want to go?” “Los Angeles, I hear there are good jobs down there.” “No, the kids and I would lose in Los Angeles. How about Denver?” “Okay, I could live with that. Let me check the job market tomorrow.”

In synergic relationship there is no loss. You may win-a-lot or you may win-a-little, but you will win.

Life Utilizes Synergic Consensus

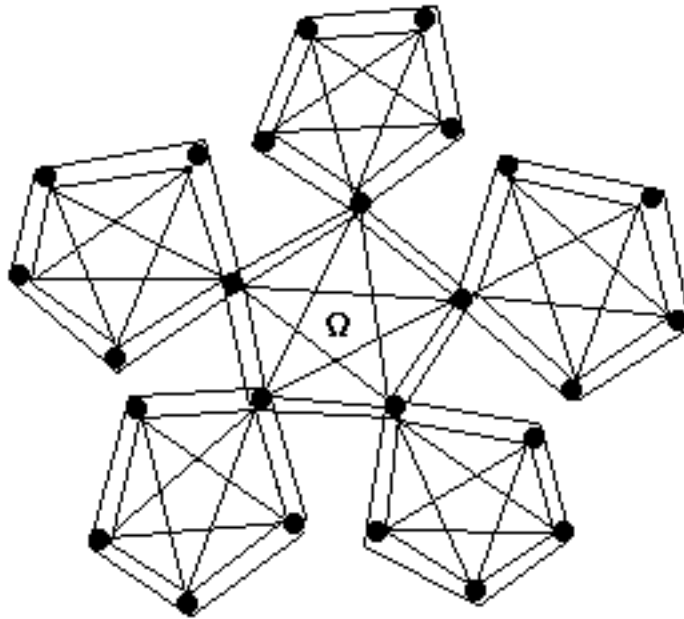
Today, mind and brain scientists have made enormous progress in understanding how the human brain works. There has been many surprises in these recent advances. But the biggest shocker is that the brain doesn’t decide what to do. Decision making is not controlled centrally in the brain. The mind-brain appears to act as a coordination and consensus system for meeting all the needs of the cells, tissues, and organs of the body. The brain doesn’t decide to eat. The cells of the body decide to eat, the brain coordinates their activity and carries out the consensus will.

Our human brain stores the gathered information from the body’s sensing of its environment, the brain presents opportunities for action reflective of both the sensing of environment and the needs and goals of the 40,000,000,000,000 cells it serves. The brain is not the leader of the body, it is the follower of the body. It is a system that matches needs of the body with its sensing of opportunities to meet these needs by action within the environment. The brain is a ‘synergic government’ that truly serves its constituents — the cells, tissues, and organs that make up the human body. The body is governed by unanimous consensus and has survived millions of years.

The apparent ‘I’ is not real. It is really a ‘we’. We humans have mistaken the self-organization of synergic consensus for the directed organization of an ego decider.

If the human body can using unanimous rule democracy and synergic consensus can organize and coordinate the actions of 40,000,000,000,000 cells so totally that we identify the whole organism as a single individual, then we humans should be able to use these same mechanisms to organize our species and solve our human problems.

The Structure of Winning



Major Features

- Decision-Action Tensegrities utilizing —
 - decision heterarchy with synergic consensus and veto,
 - action hierarchy with synergic negotiation,
 - conflict free mechanism

The Ortegrity is a system for organizing two or more humans. It produces win-win relationships between all individuals within the organization. This results in a conflict free environment which optimizes the two processes of human behavior — decision and action. The resultant is that efficiency, productivity, and quality of work-life are optimized.

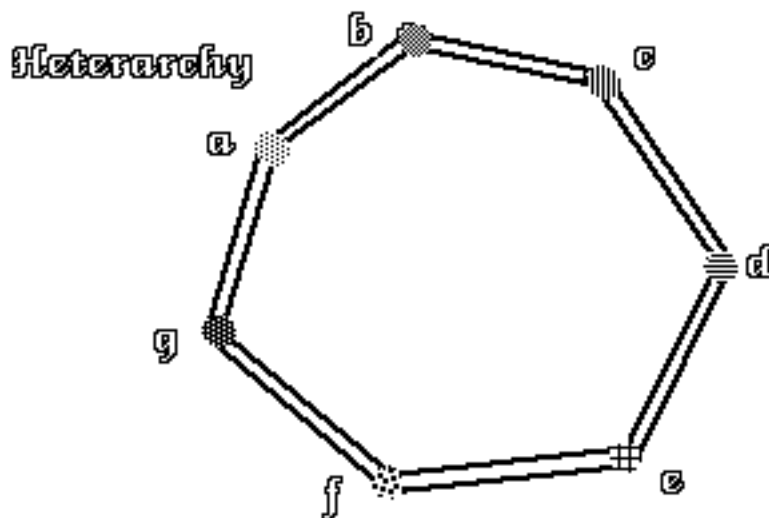
Decision-Heterarchy

In the Ortegrity, decisions are made in heterarchy. Each member's role is the same. The goal is to find the plan of accomplishing the assigned task with best effect on all. A win-win solution. This search leads to the most efficient way of doing things. All members are protected from any loss by their veto. Only a win-win plan can be approved. Such plans that will be strongly supported by all members.

Humans develop strong feelings of community in heterarchy. It strengthens their commitment to the organization. Individuals are more creative and enthusiastic in a setting where they feel respected and needed.

Decisions are always made heterarchically. All individuals in a heterarchy sit on the same level. They are equal in authority and responsibility. No one is superior to anyone else. It is the responsibility of all to accomplish the task assigned to the heterarchy. They all have equal authority and equal responsibility to decide how the task will be accomplished.

Anyone can propose a plan as to how the task might be accomplished. The heterarchy continues discussion until a unanimous decision is reached. Only those plans not vetoed carry. Every member has a veto and is expected to use it to prevent losses. This is synergic consensus. It is a powerful system for producing unanimous decision. Remember loss can still occur in synergic organization. But if loss must occur it is minimized and then shared equally by all members of the heterarchy.



The Synergic Veto — life's secret for efficiency

Most humans are surprised to learn of **veto power**. It seems very strange in the world of “directed” management. How can the boss allow employee's to veto his orders and get anything done?

Members of a heterarchy are not employees. They stand equal with the organizer. A major secret of life is that self-directed organization is much more efficient than other-directed organization. The secret is to transcend directing anyone. The Ortegrity creates the ideal environment for **self-organization**.

In an environment of self-organization, human potential blossoms. Humans operate at a more powerful level. Those in an Ortegrity soon realize that their well being depends on the success of their organizations. They realize that if they wish to be well paid their organization must be successful. They have high interest in successful solutions to their tasks. They desire to be successful, and they want their organizations to be successful as well.

Now once the members of a heterarchy have decided on a plan of action. They then renegotiate among themselves to divide the plan of action into subtasks.

Recall that all members sit on the same level as “equals”. No one has more authority than anyone else. Every one has equal responsibility and equal authority within the heterarchy. The assignment for the heterarchy is to find the best plan to accomplish the task so all members will win. It is the collective responsibility of the entire heterarchy to find this “best” solution. Anyone can propose a plan to accomplish the task. All problems related to accomplishing the task would be discussed at length in the heterarchy.

The proposed plan for accomplishing the task would be examined by all members of the heterarchy. Anyone could suggest a modification, or even a completely different alternative plan to accomplish the task — always seeking to maximize the win. All individuals would serve as information sources for each other. The heterarchy would continue in discussion until a plan could be found that worked well for everyone. The goal of the heterarchy is to find that course of action that maximizes the win for everyone, if that is not possible and the group must lose, then the goal becomes to find that action which minimizes loss for everyone. And when loss occurs it is shared equally by all.

Organizing Humans

Those individuals within even today's organizations are the ones who collectively "know" the most about the organization, and they certainly "know" best how to organize their own skills, talents and abilities .

In an environment of calmness and trust, two heads really are better than one. And it is the veto that lets this all work.

It is the veto that allows for synergic consensus within the Decision-Heterachy. Synergic consensus requires that all decisions be unanimous. All proposed plans are approved unless they are explicitly vetoed. Any member of the heterarchy can veto any plan in which they or anyone else loses. It is their duty to veto any loss in the system.

Because all loss positions are vetoed, all relationships become win-win. The power of synergic concensus rests on finding the third alternative. A major fact about human performance mental or physical is that it is greatest when the individual is winning. Examine our Olympic atheletes or our Nobel laurates. An environment that allows only win-win relationships will produce major increases in efficiency, productivity, and quality of work-life.

We humans are presently conditioned to expect our relationships to be win/lose. We view most situations from that either/or point of view. Either I win or I lose. It has to be one or the other. Synergy science reveals the third alternative. It may be harder to find, but there almost always exists a third way of doing things so no one loses. Or at worst you are assured that the loss has been minimized and equally shared. This distributes the loss so it has the least negative effect on the individual. This is the win-win way — this is synergy.

When all were in agreement and only then would the plan be implemented. The plan must insure that all members of the group win. Any member can veto a losing plan. Taking the time in decision making to discover the win-win way means that action will be many times more efficient.

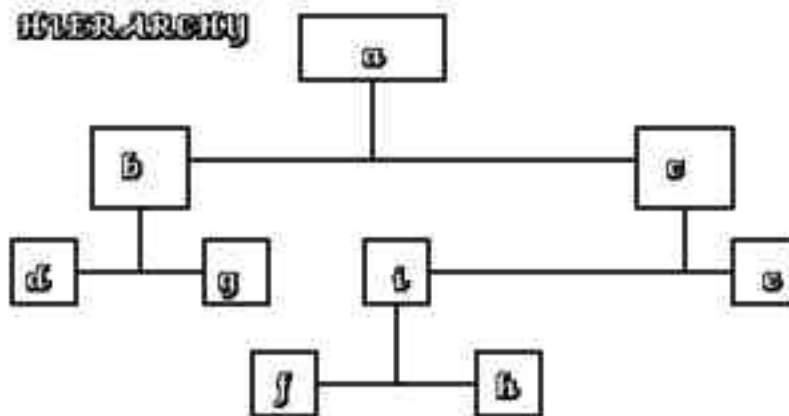
In most human organizations today, the boss simply assigns tasks or groups of tasks to each of his selected managers. This is other-directed management — telling the managers what to do. The Ortegrity operates very differently. No one tells anyone what to do. All other-direction is replaced with self-direction. Once the heterarchy has synergically decided on a plan of action, the system negotiates to form an action hierarchy. This is the structure used in implementation. Here, each member's role is different.

Action — Hierarchy

Now once the heterarchy has approved a win-win plan of action to accomplish the Synergic Task, the members of the heterarchy begin to form a action team on a negotiated basis. The individuals within the heterarchy divide labor. Action is too large for any single member. Individual responsibility and authority is agreed to through open negotiation. The action team then functions as a hierarchy to carry out the plan. Participation within the system is always voluntary. The members of the team decide how they wish to work together, or even if they want to participate. No one is ever forced to do anything they don't want to. However no win can occur unless they are successful.

Individuality is a strong feature of the action hierarchy.

Actions are always made **heirarchically**. All individuals in a heirarchy sit on different levels. They have **different** authority and responsibility for accomplishing the task. Their individual responsibility and authority is determined by **synergic negotiation**. Once having reached a decision in heterarchy they begin an open win-win negotiation to divide the labor of the plan. They develop levels of responsibility and authority. But these levels are voluntarily assumed. Again only a unanimous arrangement is permitted.



All relationships within a Ortegrity are win-win. This is the first principle of an Ortegrity, and all are pledged to uphold it. This is why every member is required to veto any action within the the system in which he or anyone else would lose. The utilization of synergic consensus and synergic negotiation produces very different forms of heterarchy and hierarchy. The forms used within the Ortegrity are nothing like committees with majority rule, or typical other-directed hierarchies. Heterarchy decides using the mechanism of synergic consensus and veto. And hierarchies are created by synergic negotiation of

individual responsibility and authority. Synergic means all must win.

There is a division of labor with the individuals negotiating as to levels of responsibility and authority in terms of implementing the plan. The individuals remain in hierarchy until the task is accomplished. When finished the hierarchy is abandoned and heterarchy reformed to make a new decision.

Ortegrity utilizes a dual mechanism in that everyone within the organization has two identities — two roles. Everyone participates in both decision making and in action implementation. Everyone has both heterarchical and hierarchical functions. The unit of organization within the Ortegrity is the sub-tensegrity — the Decision-Action Tensegrity.

The Rhythm Of Life

During implementation, the action team would continue to function until the task was accomplished, then the action hierarchy is abandoned with all members returning to heterarchy to make a new decision about the next task. This of course leading to the creation of a new action team.

Decision — > Action — > Decision — > Action — > Decision — >
Action — > Decision — > Action — > Decision — > Action — >
Decision — > Action — > and on and on and on ...

First it configures as a decision-heterarchy, it then considers its task, then one member declares a plan of action. If there are no vetoes, then the heterarchy configures itself into an action-hierarchy. During the action it functions as a hierarchy. Each member standing where he agreed to stand, performing those tasks he volunteered to perform. Once the action is successfully completed, the hierarchy is abandoned and the members return to the heterarchy.

Heterarchy — > Hierarchy — > Heterarchy — > Hierarchy — > Heterarchy — >
Hierarchy — > Heterarchy — > Hierarchy — > Heterarchy — > and on
and on and on.....

As a balanced system of discontinuous hierarchies and continuous heterarchies, the Ortegrity has the strengths of both heterarchy and hierarchy, and none of their weaknesses.

The End of Conflict

This system is designed to eliminate all internal conflict. Elimination of all conflict maximizes efficiency, productivity and quality of work-life. All relationships between all individuals within the system are win-win. This is a design characteristic of the system. It is veto power that forces the third alternative — the win-win solution. It is synergic relationship that unlocks human potential. This is the relationship that eliminates all conflict.



Using the win-win relationship in organizations is like applying grease to machinery. Japanese corporations are presently 150% more efficient and productive than American corporations. Those companies who choose to restructure as Ortegrities could experience an increase in efficiency and productivity of 1000%.

Decision-Action Tensegrities

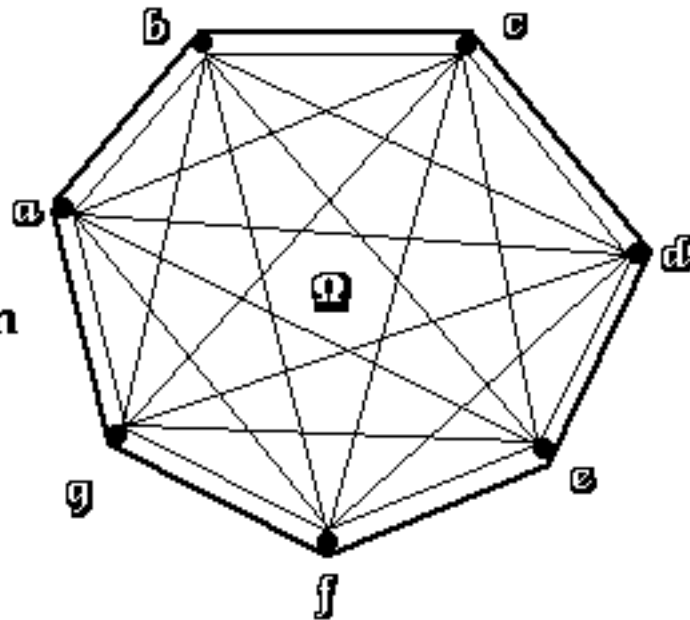
The organizing unit of the Ortegrity then is the Decision-Action Tensegrity. These are also tensegrities. Synergic organization utilizes a **tensegrity of tensegrites**.

The D-A Tensegrity is a group of between two and twenty humans. The size of a D-A Tensegrity is limited by the complexity of decision making. In a complex area such as in research & development, the ideal size may be six or seven members. In a system with simpler decision making as many as 16 to 20 individuals may form a production D-A Tensegrity.

During decision making the D-A Tensegrity uses the heterarchical form. A heterarchy with seven members is a base seven tensegrity. A two member heterarchy would be called a base two. A three member heterarchy is a base three and so on.

The following illustration of a **base seven D-A Tensegrity** represents the heterarchical relationship on the perimeter and the hierarchical relationships with direct lines of communication. All individuals have a **dual identity**. Their **heterarchical** role in **decision** and their **hierarchical** role in **action**.

Decision-Action Tensegrity



The organizers using synergic consensus will determine how to structure their Ortegrities. There is no right or wrong way. The way that insures the maximum win and prohibits loss is the best way for a particular system. I expect Ortegrities will be as diverse as life forms.

The “organizer” does not direct the other members of his group. He would instead be responsible for coordinating their organization into an effective team.

The “organizer” begins by presenting the synergic task to the individuals within the heterarchy.

An Ortegrity divides itself into synergic groups in order to function. We can call these groups Decision-Action Tensegrities. Heterarchy is used when making decisions and hierarchy when carrying out actions. Each Decision-Action Tensegrities has an “organizer” that functions as coordinator-leader. When the group is making decisions, he/she coordinates the heterarchy. When the group is taking action, he/she leads the hierarchy. Decision-Action Tensegrities can have two to twenty or more members.

StartUp Ortegrity

A StartUp Ortegrity begins when a single individual commits to using the synergic mechanism of the O.T. to accomplish some goal or set of goals that are beyond his/her abilities as an individual.

The primary organizer first sets about recruiting one or more other individuals to help him or her. The primary organizer will begin by sitting down in heterarchy with the primary group and define the primary task using synergic consensus and veto. The members of the primary Decision-Action Tensegrity all have equal responsibility and equal authority in reaching synergic consensus and defining the primary task.

They discuss things fully. Any member of the group can propose a change to improve or refine the primary task. Only those modifications which find support from all members of the group are implemented. Anyone can veto any proposal in order to prevent loss, or offer a modification to insure a greater win. Only those proposals unanimously agreed to carry.

Once the primary synergic task is defined and unanimously elected by the heterarchy, then a plan for synergic action must be developed using synergic negotiation. Now the members of the heterarchy will accept hierarchichal roles with individual responsibility and authority. If the primary synergic task is within the abilites of the primary Decision-Action Tensegrity to accomplish it, then they accomplish it operating in action-hierarchy. When they are done, they reconfigure back into decision-heterarchy to define their next synergic task.

If however, the synergic task is too large for the primary Decision-Action Tensegrity to accomplish, then part of the primary synergic task will be to make the Ortegrity larger. This is accomplished by having the primary members recruit and organize secondary D-A Tensegrities.

TopDown Self-Organization

Once all members have agreed to a primary plan of action, they then divide it into smaller secondary plans for distribution among themselves. This results in the self-assignment of tasks. The members of the primary tensegrity, then divide labor through the voluntarily formation of a action-hierarchy to implement the plan. Each “organizer”, the term “manager” is scraped altogether, then takes his task down to the secondary tensegrity which he is responsible for organizing.

The pattern of organization is from the top down. This is not the “other-directed” hierarchy of American Capitalism. The process of organization is from the top down, but the mechanism is “self directed” heterarchy. Only when synergic consensus has been achieved at the higher level can the organizational focus move down to a lower level.

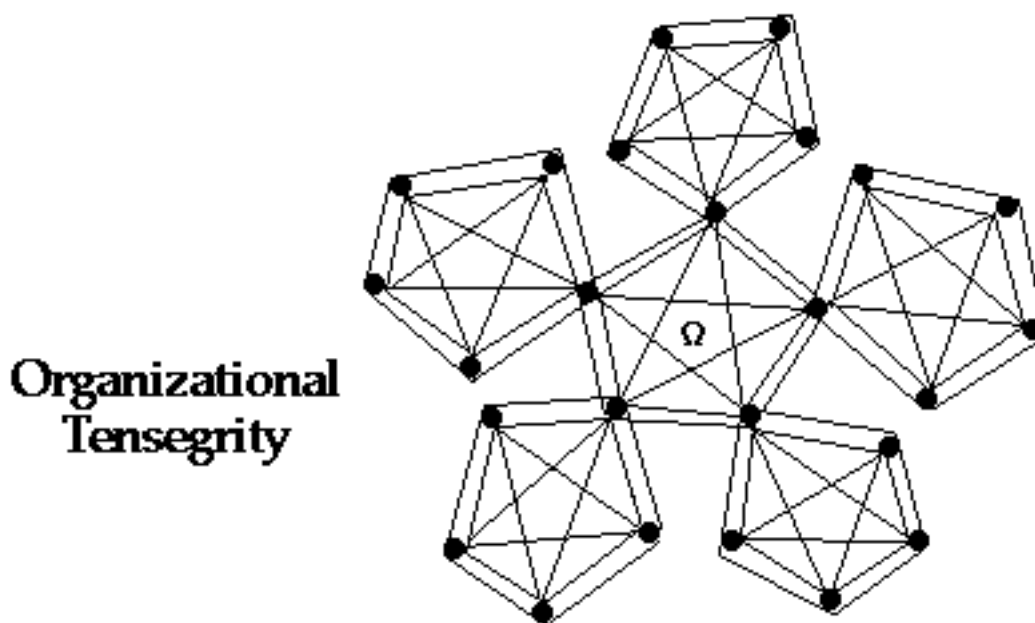
Within the Ortegrity, most “organizers” will function at two levels of tensegrity. Within the primary tensegrity, they are “organized” by the primary “organizer” — the synergic alternative to a CEO. In addition these members are also the “coordinators” of their own secondary tensegrities which they are responsible for organizing.

Within the Ortegrity, those individuals operating at two levels are then both organized and organizers. As members of the primary tensegrity, they are organized by the “primary organizer” — the O' (called the O prime) and they are also the organizers of their own secondary tensegrities. Each of these is therefore an “organized-organizer” — the O-O (called the double O).

An organization can have any number of Decision-Action Tensegrities. These Decision-Action Tensegrities can be on different levels. Large organizations would include several levels of Decision-Action Tensegrities. These different levels are referred to simply as first level, second level, third level and so on in synergic terminology.

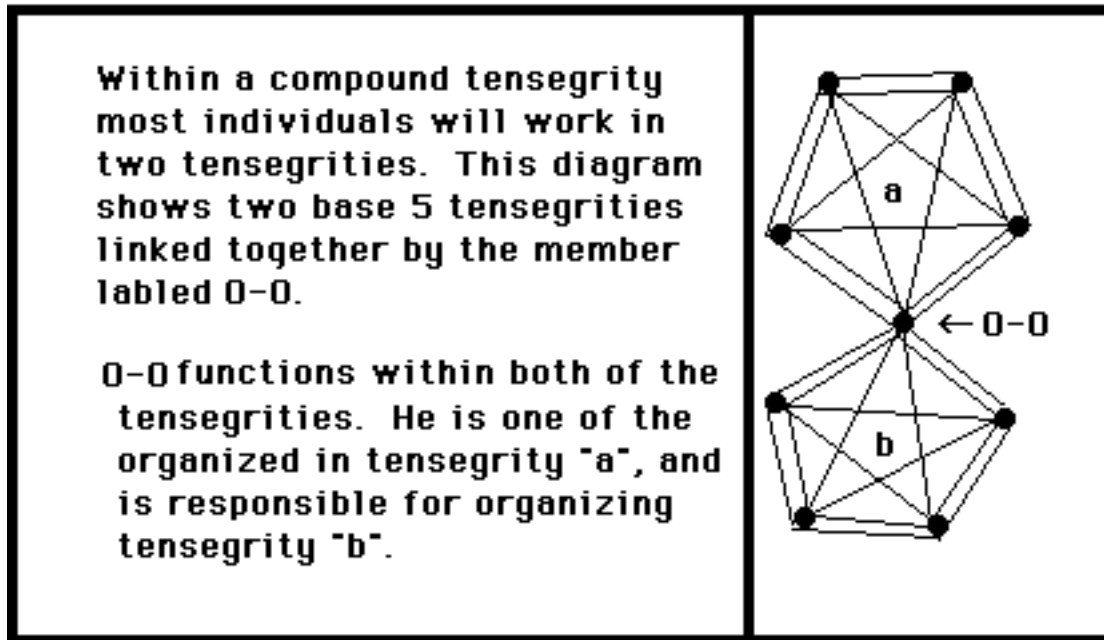
Compound Tensegrities

The following illustration is of a base five, level two O.T.. Twenty five employees with one five-member primary DA-Tensegrity and five (five-member) secondary DA-Tensegrities.



The central DA-Tensegrity is the primary Tensegrity. It divides the primary tasks of the

company into secondary tasks, these are then carried down to the secondary Tensegrities for solution by the O-Os, “organized-organizers”. In this example the O' functions as both primary organizer and one of the O-Os.



Ultimately Flexible

No known system of organization is more flexible and adaptive than Living systems. The Ortegrity is a pattern of life.

The Ortegrity is ultimately flexible. There can be two to twenty individuals within the base D-A Tensegrities. Bases can be regular — all with the same number of members or irregular — all with different numbers of members or any mixture of regular and irregular.

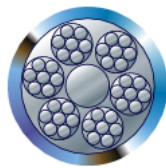
There can be any number of levels, and any number of branches on each level. The system is so powerful that twelve levels looks like enough for most of our needs.

The following chart is based on a base seven regular tensegrity. All DA-Tensegrities would have seven members.

LEVEL	# of base tensegrities	# of individuals
1	1	7
2	8	49
3	57	343
4	400	2401
5	2801	16,807
6	19,608	117,649
7	137,257	823,543
8	960,800	5,764,801
9	6,725,601	40,353,607
10	47,079,208	282,475,249
11	329,554,457	1,977,326,743
12	2,306,881,200	13,841,287,201

A level 12 Ortegrity would be adequate for organizing the entire humans species within a single organization. Recalling that the larger a tensegrity the more powerful it will is. Synergic science predicts this will also be true for human organizations structured as Ortegrities. Therefore, I would expect a trend towards very large organizations.

Imagine, what could be possible if the entire human species were a single organization. No conflict, no wars, no crimes. Is there anything we could not accomplish?



Principles of Synergic Compensation

We are at the beginning of the synergic revolution. Synergic mechanism is new to all of us. As we humans learn more and become more experienced, our synergic compensation mechanisms will undoubtedly evolve as well. Those individuals creating Ortegrities will use synergic consensus and negotiation to determine how to best compensate their associates within their organizations. There is no right or wrong way. The way that insures the maximum win and prohibits loss is the best way for a particular system. I expect Ortegrities will utilize many different forms and mechanisms.

Therefore, my goal here is to present the principles of synergic compensation, the details will be developed by those humans who utilize synergic mechanism to create organizations.

Synergic Production requires Synergic Compensation.

The **means** must be consistent with the **ends**. All attempts to increase synergy in today's production environments **must** fail because neutral and adversary compensation mechanisms are self-defeating. Synergic production is much more effective and efficient, in part because synergic compensation is much more just and generous.

In the today's neutral organizations, employees are paid a fair wage for a fair days work. This contract is based on neutral mathematics, where $1+1=2$. That's why the employee works just hard enough to prevent their being fired, and the employer pays just enough to keep the employee from quitting. In synergic economics, where $1+1$ can $= 25$, or even $= 125$, neutral compensation is grossly unfair, and powerfully NONproductive.

The synergic associate can rely on the fact that he will not be hurt within the synergic organization. He won't be exploited or ripped off. His contributions and efforts on behalf of the organization will be compensated for their synergic value to the organization. Since synergic organization is much more efficient and productive than neutral organizations, he can expect much greater compensation.

Synergic Compensation is a Share of Revenues

Let's create a simple production model. Imagine that you and I are going to plant a vegetable garden in the spring. We agree to work together sharing in the produce that the garden yields. You agree to provide a place and water for the garden. I will provide seeds,

equipment, and fertilizer. And, we both agree to perform the gardening labor.

Now we both desire compensation for our work, but realistically, there is nothing to divide until after the vegetables are harvested.

Revenue Shares are proposed as a first generation synergic compensation system for this very reason. This simple illustration serves to remind us of some universal economic truths.

- Dividing the fruits of our labor can occur only when the production process is completed.
- During the production process, no revenue is generated that could be used to pay either of us a salary.
- We have no real basis for even calculating revenue shares until after the production process is completed.

We may need some interim compensation mechanism during startup, but revenue shares are the ideal synergic compensation method.

Synergic Revenue Shares result from the Action and Leverage invested.

The two determinants of human **production** are: 1) the amount of human **action** used within the production process, and 2) the extent to which that human action is **leveraged**.

$$(\text{ACTION}) \times (\text{LEVERAGE}) = \text{PRODUCTION}$$

All members of the Ortegrity, who invest their human **action** in synergic production earn a revenue share. All members of the Ortegrity who **lever** the human **action** used within synergic production by investing the use of their property earn a revenue share. Human action is leveraged by Tools. Tools may be physical or intellectual. A hammer is a tool. the Ortegrity is a tool.

Synergic **action** is organized and **leveraged** into Synergic Tasks. These Synergic Tasks generate Synergic Revenues that then can be divided into Synergic Revenue Shares.

Action Revenue Shares — Tool Users

Synergic production is accomplished by the joint **action** of Tool Users working together to accomplish a Synergic Task. Per hour invested, every **action** member of a Synergic Task team earns an equal share with every other **action** associate.

Lever Revenue Shares — Tool Makers

Synergic production is magnified by the joint **leverage** provided by the Tool Makers whose **leverage** supports and **magnifys** the **action** of the Tool Users. Per hour used, every Tool Maker earns an equal share with every other **leverage** associate.

Synergic Compensation accepts Synergic Equality.

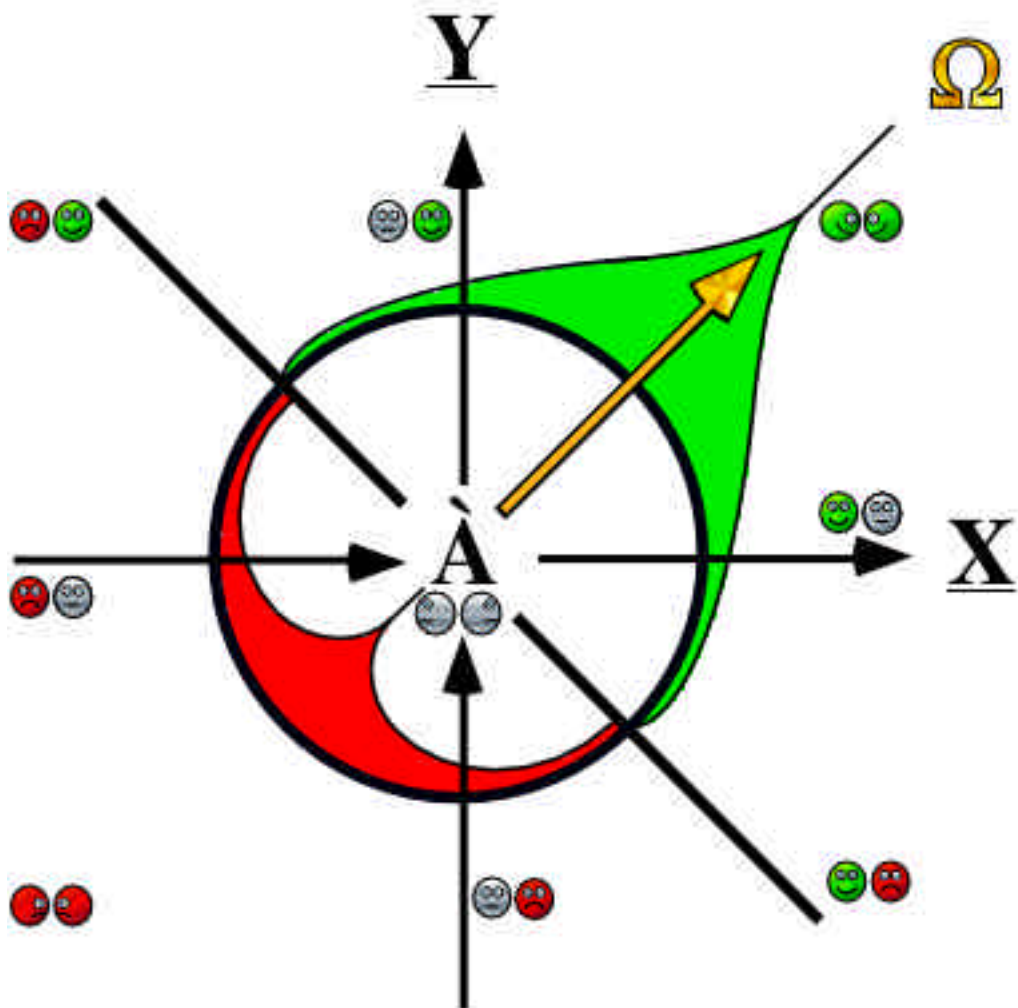
When two individuals work together in synergic relationship to accomplish a Synergic Goal. They will be considered as a single system. When individuals work together in synergic relationship, new abilities, skills, talents, etc., emerge as a part of that relationship, that are not there when they work separately. This “**more**” is the Co-Operators’ surplus. When individuals work together in synergic relationship, they **equally** contribute to the synergic emergents, and will **equally** share in the Co-Operators’ surplus. Recall the tenets of **Synergic Equality**:

- 1) In synergy, I am ONE with my associates.
- 2) In synergy, I am MORE with my associates than by myself.
- 3) In synergy, I am EQUAL to all my associates.
- 4) In synergy when we WIN, I will win MORE with my associates than by myself and I will share equally in the GAINS.
- 5) In synergy, when we LOSE, I will lose LESS with my associates than by myself and I will share equally in the LOSSES.
- 6) In synergy, we will win or lose together, but we are TOGETHER.

In our present neutral world, we are paid for our time not for the value of our production. Most employees are paid a fixed hourly rate. While there are some businesses that utilize incentive mechanisms such as tips in restaurants, commissions in retail sales, or bonuses of some sort, these incentives are usually limited and do not occur in the majority of businesses.

Most employees are paid a flat hourly rate regardless of how busy the company may be. For example let us look at the clerk serving you at McDonalds. They may be making \$6 dollars an hour. If ten customers come in one hour, they are paid 60 for each customer they serve. If only one customer comes in during the same hour, they are paid \$6 for waiting on that one customer. Since it is obviously much easier to serve and satisfy one customer as apposed to 10 customers, which situation does the clerk prefer. This is the anti-incentive mechanism that is the rule in our present world.

Synergic compensation incorporates the incentive mechanism. Synergic associates share in the revenues from their synergic actions and leverages. For any synergic task, they share equally.



Haskell's **Periodic Coordinate System**

Synergic Advantage is greatest when X & Y are **equal**. **Equality** maximizes the **win-win Co-Action**. When some are superior and some inferior the synergic advantage is lost, then

at best $\{1+1\} = 2$ or at worst $\{1+1\} \lll 2$. Again equality of synergic associates is not altruistic, its just good business. When I am compensated synergically, I will be more valuable and productive to my organization. We both win. The organization makes more by paying me more.

This equality of compensation is not based on altruistic reasoning. Haskell's Periodic Coordinate System reveals that synergic advantage becomes greatest when all members participate equally. Productivity is largest when the producers are equal. Synergic Equality produces the greatest CoActions, the largest wins for everyone. When all are equal then $\{1+1\} = 125$.

Synergy is those unpredicted and unexpected positive emergents that result from the relationship of the parts. These extra, addition bonuses are a phenomenon of the relationship and cannot be found by examining the participants separately.

Haskell's **The Unified Science** has determined that the Co-Operators' Surplus should be owned equally by all who synergized within the Synergic Task Team to create it. Equality is required to maximize synergic advantage. With Synergic Revenue Shares, each of the co-Operators earn equal shares in the Co-Operators' Surplus. Humans using the Ortegrity are significantly more productive than those organized in any other way.

Synergic Equality Equal Compensation

Synergic Equality does not mean that all members of an Ortegrity will receive the exact same compensation. Activity within the Ortegrity is divided into distinct and separate synergic tasks. which generate distinct and different revenues.

Because the number of hours of action and leverage each individual invests will differ, because the number of the synergic tasks they participate in will vary, and because the revenue generated for those different tasks will also differ, and because some individuals may work at two levels within an Ortegrity and some at only one level, individuals receiving synergic compensation are not all paid the same.

While the revenues from any one particular task are shared equally among those associates working on that task team

Equal contribution to the Ortegrity results in equal compensation. Different contribution to the Ortegrity results in different compensation.

Then we can see that a large system would be a hierarchy of heterarchies. Those individuals operating at the more primary levels will usually receive greater compensation than those operating at more secondary levels of system. This is a proprietary compensation system. The more value an individual's action and decision making is to an organization, the more he/she will be compensated. This is the system that maximizes incentive and motivation. It is a system, that encourages the "stars" to come out.

Calculating Revenue Shares

The Synergic Task Team is composed then of two types of associates. Those investing action and those investing leverage. Using the principle of greatest synergic advantage, we will divide the revenue equally between those providing action & those providing leverage for a particular synergic task. If Action and Leverage are equal partners, then this means 50% will go to the action associates & 50% will go to the lever associates.

However, it is important to recall that that these are only principles of synergic compensation. Sometimes action and leverage may not be equal partners. Some groups of production associates might find that their products use no levers. All synergic associates are action associates.

Another group might find that their products result almost exclusively from the use of levers. Very little action is required in fully automated factory.

The humans choosing to join in synergic organization can modify the specific compensation formula to better fit their particular circumstance. This is a decision for those in the prime heterarchy. Again, whatever decision is reached through synergic consensus is the right decision for that group.

Within synergic organization, any member can be an **action** associate. Any member can be a **lever** associate. Any member of the synergic organization can be both an **action** and a **lever** associate. **Action** and **lever** associates might invest **leverage** in several different Synergic Tasks running concurrently. They would earn **action** and **lever** Synergic Revenue Shares from each of the Synergic Tasks they invest in.

The **primary organizer** or **O'** (called the O prime) for the *Primary* DA-Tensegrity negotiates win-win contracts called **bindings** with all **action** and **lever** primary associates.

The *Level 2* Organized-Organizers or **O-O** (called double Os) for the *Level 2* DA-Tensegrities negotiate bindings with all the action and lever *Level 2* associates.

These contracts are based on the following synergic principles. We all must win. All loss is vetoed. We are one. All accounts are listed by Synergic Task. The **O'** of each heterarchy opens an account for every member of the Synergic Task Team prior to Launch. Then each member of the team is responsible for accurately reporting the hours of **action** they invest in the Synergic Task. These same members also list the **tools** used by them to **lever** their invested action. Synergy runs on trust. The Tool Makers trust the Tool Users to fairly report that usage.

The individual investing Action will receive a revenue share based on the number of hours of Action investment. The individual investing Tools will receive a revenue share based on the number of hours of Tool usage. For every hour of **action** invested there is usually one hour of **leverage** used.

When you produce as an individual, you receive 100% of the revenue produced. When you produce as part of a synergic team, you receive an equal share with all your teammates. When you produce together, you share the rewards together. In a Synergic Task team of two, your action royalty share would be 50%. In a team of ten, your action royalty would 10% and so on. When you consume as an individual, you pay 100% of the costs incurred. When you consume as part of a synergic team, you pay an equal share of the total costs incurred. When you consume together, you pay together. In a team of two, you pay 50%. In a team of ten you would pay 10%.

Synergic Organization runs on **trust**. Synergic Organization is a voluntary process. We come together, because we want to be **more** together than, we can ever be separately. We are trading our **independence** for **interdependence**. We are friends. Our goals are aligned, and we choose to **trust** each other.

Each Synergic Task associate is entrusted to accurately report the number of hours they use **levers** invested in the Synergic Task. Each Synergic Task associate is entrusted to accurately report the number of hours of **action** he or she invests in the Synergic Task.

This sounds like a complicated system. How then is it possible to determine the amount of synergic royalty, that is fair and just for a particular synergic associate?

Automatic Remoteness Dilution

Automatic Remoteness Dilution was a mechanism developed by Andrew J. Galambos to calculate production revenue shares. He introduced **A.R.D.** as one of the primary components of his **Moral Capitalism** based on his formulation the **Theory of Primary**

Property.

Galambos' definition that **Property** is a human's **life** — **Primordial Property**, and all non-procreative derivatives of one's life including thoughts, ideas and actions — **Primary Property**, and all secondary derivatives from one's thoughts, ideas and actions including the access to and use of land and the production, utilization, enjoyment, and disposal of material, tangible goods of all kinds from ash trays to television sets, from log cabins to skyscrapers, from oxcarts to jet planes. — **Secondary Property**.

Within Galambos's **Moral Capitalism**, all production results when humans organize together and invest their Primary and Secondary Property in the production process.

The number of individuals investing Property in the production process could range from a few to many thousand. The amount of property each individual invested in a project could also vary dramatically.

To protect property rights and insure fair compensation, Galambos developed **Automatic Remoteness Dilution** as a mechanism for automatically recalculating and adjusting revenue shares instantly and continuously to the changing number of investors and to the changing amount of property each individual was investing.

The **Ortegrity** utilizes the **A.R.D.** mechanism to calculate Synergic Revenue Shares. Automatically tracking and recalculating revenue shares each and everytime there is a change in invested **action** or in invested **leverage** within a Synergic Task Team.

$$\begin{array}{l} \text{*RS}_i = \text{*Revenue Share for associate(i).} \\ \text{Total REVENUE}_{\text{Synergic Task}} \left[\frac{\text{ACTION}_i + \text{LEVER}_i}{\sum_{i=1}^n \text{ACTION} + \sum_{i=1}^n \text{LEVER}} \right] \end{array}$$

Who is entitled to revenue shares?

In synergic culture, those desiring to use **Property** like the **Ortegrity** would be encouraged to do so, but would be morally obligated to pay the living owners of the **Ortegrity** — a **Lever** Revenue Share. The amount of the revenue share would be reflective of its value to those humans using it and would be subject to automatic remoteness dilution like any other Lever Revenue Share.

Review

The Ortegrity introduces an entirely new mechanism of compensation for associates. The Synergic Revenue Shares Compensation System is designed to optimize human motivation as well as maximize efficiency, productivity, and quality of work-life.

The extreme flexibility of Synergic Revenue Shares allows accurate tracking of the dynamic process within an Ortegrity. No synergic associate can claim unique ownership rights to the revenues produced within an Ortegrity. To review then the principles of synergic compensation are:

- 1) Synergic Production requires Synergic Compensation.
- 2) Synergic Compensation is Royalty Compensation.
- 2) Synergic Revenue Shares result from the Action and Leverage invested.
- 3) Synergic Compensation embraces Synergic Equality, but Synergic Equality Equal Compensation.
- 4) Automatic Remoteness Dilution is utilized to instantly and continuously adjust revenue shares and revenue shares to reflect changing investments of action and leverage in the dynamic Ortegrity.



You help.
Others help.
You help others.
Others help you.
You help others help you.
Others help you help others.
You help others help you help others.
Others help you help others help you etc., etc., etc..



What are TrustMarked documents?

Trust is not a new word for humanity. It was coined long ago when the world was dominated by the adversary way. Trust meant that I could rely on you not to hurt me. It was safe to assume that you were not my enemy. Synergic trust means means more. It means that while I can rely on you not to hurt me, I can further rely on you to help me. It is not only safe to assume that you are not my enemy, but I can count on you as a friend.

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We trust ourselves to have created a valuable service that will help you. We trust you to recognize that value and choose to help and support us. We believe that helping others leads to their helping us. We believe in Co-Operation that is operating together so that we all win.

Synergic science offers us choices that can lead to a world that works for all humanity. This site will focus on presenting positive alternatives for our human future.

Synergy means working together—operating together as in Co-Operation—laboring together as in Co-Laboration—acting together as in Co-Action. The goal of synergic union is to accomplish a larger or more difficult task than can be accomplished by individuals working separately.

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