

## On Christopher Alexander

*[The Nature of Order: The Phenomenon of Life \(Book 1\)](#)*

*[The Nature of Order: The Process of Creating Life \(Book 2\)](#)*

*[The Nature of Order: A Vision of a Living World \(Book 3\)](#)*

*[The Nature of Order: The Luminous Ground \(Book 4\)](#)*

*[Notes on the Synthesis of Form](#)*

*[A Pattern Language](#)*



The hope is that this “[teacher’s reference guide](#)” provides some color on Christopher Alexander and his key principles on architecture and the principles behind “life-giving structures.”

This guide covers 6 of his books: [A Pattern Language](#), [Notes on the Synthesis of Form](#), and the 4-book collection found within *The Nature of Order: The Phenomenon of Life, The Process of Creating Life, A Vision of a Living World, The Luminous Ground*. This guide mainly covers *The Nature of Order* series, but the other two are incredibly powerful as well.

Alexander is one of the 20<sup>th</sup> century’s godfathers of architecture and his influence is felt throughout the world. He seeks a more unified, holistic, and integrated model of *creating* life-giving structures so that we can live in a more complete and fulfilling world.

One of my key takeaways was how Alexander thought like a biologist, saying that gradual, step by step improvements is the way to create beautiful spaces that are “alive” and that humans can thrive in. Architecture (rather, building of any sort, whether software development, building a company, setting a culture, or anything else) shouldn’t be a rigid plan, but an iterative process that unfolds over time. This is in stark contrast to how architecture has been taught in the 20<sup>th</sup> and 21<sup>st</sup> centuries and is something this rigidity is something he is clearly nervous about.



There are deep and practical implications to Alexander’s work that we can all stand to benefit from, and I hope this teacher’s reference guide helps curate these lessons and bring them to life.

## *Design, Value, and Degree of Life*

The ultimate object of design is form...It is based on the idea that every design problem begins with an effort to achieve fitness between two entities: the form in question and its context. The form is the solution to the problem; the context defines the problem...The context is that part of the world which puts demands on this form; anything in the world that makes demands of the form is context. Fitness is a relation of mutual acceptability between these two. In a problem of design we want to satisfy the mutual demands which the two make on one another. We want to put the context and the form into effortless contact or frictionless coexistence

It is the aim of science to give such a unified description for every object and phenomenon we know. The task of chemistry (and it has been remarkably successful in this) is to relate functional and formal descriptions of chemical compounds to one another, so that we can go backwards and forwards between the two, without loss in understanding. The task of physiology has been to relate the functional behavior of the body to the organs we observe in anatomy. Again, it has been reasonably successful. The solution of a design problem is really only another effort to find a unified description. The search for realization through constructive diagrams is an effort to understand the required form so fully that there is no longer a rift between its functional specification and the shape it takes...A design problem is not an optimization problem. In other words, it is not a problem of meeting any one requirement or any function of a number of requirements in the *best possible way*. For most requirements it is important only to satisfy them at a level which suffices to prevent misfit between the form and the context, and to do this in the least arbitrary manner possible

Any state of affairs in the ensemble which derives from the interaction between form and context, and causes stress in the ensemble, is a misfit

Every form of order has some degree of life in it. Thus life is not a limited mechanical concept which applies to self-reproducing biological machines. It is a quality which inheres in space itself, and applies to every brick, every stone, every person, every physical structure of any kind at all, that appears in space. Each thing has its life.

In this objective sense, the relative degree of value, or relative degree of life, in different parts of matter, must then be a fundamental and objective feature of reality. Not all nature is equally beautiful. Not all of it is equally deep in its wholeness. Some of nature may be "better" than other

parts of nature...The gradual emergence of value is then drastically threatened. The activity of building the world - what we call architecture - plays a huge part in this process. Both those parts of the world which are still natural - such as valleys, fields, and streams - and those which are clearly man-created - such as towns, buildings, streets, gardens, and works of art - may either go towards greater value and greater wholeness or towards greater ugliness and confusion

Not-separateness is a key property which adds degrees of life. What not-separateness means, quite simply, is that we experience a living whole as being at one with the world and not separate from it - according to its degree of wholeness...It is that quality which comes about from each center, to the degree it is connected to the whole world. A thing which has this quality feels completely at peace because it is so deeply connected to the world around it

Order can't be described fully in a mechanical way. It is a harmonious coherence of what simply exists, melted unity, deepest order we are aiming for. A purely mechanistic view leads to absurd, non-living designs when the aim should be a building which has profound life and order

In large part, I am hoping to extend the discussion of what is false and true to statements of value. Truth is not only objective, but also directly linked to people's feelings. This extended idea of objective truth will allow statements about relative harmony, wholeness, and so forth to be judged as true or not true. In this view, these kinds of statements are not left as private intuitive opinions or agendas, but describe the structure of things in the world as they are

I have attempted to draw attention to the idea that life, as a phenomenon, occurs not only in living organisms and ecological networks. It is something, a quality and a structure, which occurs in all kinds of places and systems in the world, both inorganic and organic.

External structures influence internal freedom. The right kind of physical environment, when it has living structure, nourishes freedom of the spirit in human beings. In the wrong kind, lacking living structure, freedom of the spirit can be destroyed or weakened. If I am right, this will suggest that the character of the physical world has impact on possibly the most precious attribute of human existence. It is precisely life - the living structure of the environment - which has this effect. The best environment is one in which each person can become as alive as possible - that is as vibrant intellectually, physically, morally, and in which people can reach, as far as possible, their own potential as human beings. One may assume, too, that each person naturally does everything possible, to be alive. Freedom lies in the ability a person has to react appropriately to any given

circumstance. The perfectly free human being is a person who, no matter what she or he encounters, can act appropriately

The more powerful a center is, the greater its influence on the wholes around it. Thus, the system of powerful centers in the world has a practical and immediate physical influence on the behavior of other nearby centers

### *Wholeness, Truth, Love, Awareness*

The things we like (from the heart) make us feel wholesome when we are near them. We also feel wholesome when we are making these things. The more accurate we are in the things we really like, in this sense of liking from the heart, the more we find out that we agree with other people about which these things are. What we like from the heart coincides with the objective structure of wholeness or life in a thing. As we get to know the "it" which we like from the heart, we begin to see that this is the deepest thing there is. It applies to all judgments - not just about buildings and works of art, but also about actions, people, everything. Somehow, the experience of real liking has to do with self. As we find out which things awaken real liking in ourselves, we find ourselves more in touch than before with our own selves.

A thing is truly personal when it touches us in our humanity. Therefore, the personal is not idiosyncratic, but universal. It refers to something true and fundamental in a thing itself. I believe all works which have deep life and wholeness in them are personal in this sense. Wholeness = happiness. The ultimate criterion for whether something works in nature, just as in buildings, therefore also depends on the extent to which it resembles the healthy human self. The connection between order and feeling is fundamental. Profound order makes us feel our own existence. When we experience something which has deep wholeness, it increase our own wholesomeness. The deeper the wholeness or life which we meet in the world, the more deeply it affects our own personal feeling

Functional and feeling are one and the same, utility = beauty. As a result of real life, real need - nature, cottages, etc. have more life. They have functional requirements

This is why we need the mirror of the self test. It is an instrument that not only helps us discover living structure and see living structure accurately: it also helps us to discover what we truly like

The idea that truth is to be found in the self, not in the world beyond ourselves seems questionable from nearly any reasonable empirical point of view...But, in all soberness, I believe this is simply true.

In aikido, practitioners are asked to compare the inner state they find themselves in when comparing two actions. They are trained to discern and then to use their inner awareness of relative greater harmony in themselves as a measure of the goodness of the action contemplated. If we can train ourselves in the same way, we too can become instruments to measure the system's objective degree of life and wholeness. Over time, we can recognize and move toward that wholeness and the task of learning to distinguish these states in oneself is the main method by which a person can make progress...All this hinges on the fact that when we pay attention to our own wholeness, we find that the degree to which conditions in the external world do increase our wholeness, is predictable. It is, in the end, this measuring technique that provides one mainstay of the claim that degree of life is an empirically observable quality in the world

Wholeness and real liking has to do with staying power, duration and not fads

What is fascinating is that the hint of a conception of value which emerges dynamically from respect for existing structure. We do not need any arbitrary or external criterion of value. The value exists within the unfolding of the wholeness itself. When the wholeness unfolds unnaturally, value is destroyed. When the wholeness unfolds naturally, value is created...This gradual rubbing together of phenomena to get the right result, the slow process of getting things right, is almost unknown to us today.

Principle of Least Action - the evolution of any dynamic system will always follow the path of least work or the least potential energy. I postulate that every natural system has a disposition, a tendency caused by the most simple way forward for the system to move in the direction which preserves wholeness. By this I mean that as the system evolves, it destroys these symmetries and larger centers as little as possible. It maintains as much of the structure of symmetries and centers as possible, and destroys as little of the structure and symmetries as can be managed while yet moving forward...All that is required is that this mechanical procedure is sensitive to the whole and is influenced and guided by the structure of the whole. That is the secret of morphological

emergence in natural phenomena. It is also, I maintain, the secret of all artistic and constructive human-inspired acts of creation

All the well-ordered complex systems we know in the world, all those anyway that we view as highly successful, are *generated* structures, not fabricated structures...Complex, generated structure cannot be arrived at in any other way. One structure is established. The next structure is then made to appear within the structure, and from that structure. Each stage develops the previous stage, each one creating the conditions from which the next can be created, and from which it flows. It is in this process that the 15 properties, and their enormous density, can be achieved. That is the secret of the whole thing

A living process is a step-by-step adaptive process, which goes forward in small increments, with opportunity for feedback and correction at every increment. It is always the whole which governs in a living process. Even when only latent, whatever greater whole is latent is always the main focus of attention and the driving force which controls the shaping of parts. The entire living process - from beginning to end - will be governed and guided and moved forward by the formation of living centers in such a way that the centers help each other

Architecture becomes living when non-mechanical, fluid, unique to its circumstances, responds to what is there rather than impose on what is there (similar to aikido), grow with nature, arise out of nature, looseness and symmetry. Deep feeling appears in these buildings, as it does in nature, because they emerge through subtle adaptation from the whole, and because at each stage of their unfolding they support the whole

A proper environment makes you feel like you belong to it - a feeling of joy and connectedness that hinges on the sensation that we have the right to be there, that we belong to the world and it belongs to us. Only living process can generate belonging. When living processes are working well, our belonging comes about naturally

In the best cases, in the cases which have the most life, the building form will most often be interwoven in some fashion with nature itself. In the best cases, it will seem, almost indistinguishably, to be part of nature, thus forming a seamless whole. The clearest way I can say this, is to point out that it will - in this case - seem extremely ordinary. It will appear normal, and be normal

When I am building, I am searching for the "I" – the myself, lying within all things. It is that shining something which draws me on, which I feel in the bones of the world, which comes out of the earth and makes our existence luminous ...I can feel it, nearly always, almost before I start. Or, rather, I do not usually let myself start until I can feel this thing.

My hypothesis is that all value depends on a structure in which each center, the life of each center, approaches this simple, forgotten, remembered, unremembered "I"...that in the living work each center, in some degree, is a connection to this "I", or self...that the living steel and concrete bridge is one in which each part is connected to this self, awakens it in us...that the living song is one in which each phrase, each note, is connected to this self, awakens it in us, reminds us of ourselves...I believe that the ultimate effort of all serious art is to make things which connect with this I of every person. This "I", not normally available, is dredged up, forced to the light, forced into the light of the day, by the work of art...Effectively, what all this amounts to is that in the process of making things through living process, gradually I approach more and more closely knowledge of what is truly in my own heart...I learned to value only that which truly activates what is in my heart. I came to value those experiences which truly activates what is in my heart. I came to value those experiences which activate my heart as it really is. I sought, more and more, only those experiences which have the capacity, the depth, to activate the feeling that is my real feeling, in my true childish heart. And I learned, slowly, to make things which are of that nature

Flaw of a mechanical world view is that it does not and cannot take into account our inner, subjective lives. Matter and mechanisms compared to actual experience. This is what Whitehead calls the bifurcation of nature and I believe we can again weave them together into a united, single picture

Each center is a focused zone of space which may be characterized by saying that, to some degree, space in that zone itself comes to life. Life is an attribute of space itself and increases in some measure according to the organization of the space. The degree of life of any given portion of space, thus appears like a color, or like an overall attribute - a quality which appears in the space itself, along with the structural organization that also signals its appearance

To the degree a center is a living center, it is also a picture of the true self, and - very startlingly - has this character for all people, not just for any individual

Only a deliberate process of creating being-like (or self-like) centers in built structure throughout the world, encourages the world to become more alive

### *Symmetry and Simplicity*

Everything in nature is symmetrical unless there is a good reason for it not to be. All things are similar and the things that are different must be different. This is a profound idea and if it could be expressed precisely, it would be the rule from which everything, all form, derives

At each step, get rid of everything that is not required - "making life" and "being simple" are the same...I believe that the drive toward simplicity is possibly the deepest feature of living process, and its most essential feature. Anything that does not have this drive toward simplicity cannot, really, be taken seriously as a living process. And this is a very tough criterion, a hard task-master

Perfect symmetry = death. Want local symmetry, not whole symmetry. Life = coherence.

### *Making Wholeness Heals the Maker*

When you make a beautiful thing, the depth of the person within becomes more vivid, lives more intensely for a moment. In each of us, a person is existing or waiting to exist. This person - the most free version of that person - does exist, occasionally, for brief glimpses. When one of us becomes free, this latent person inside comes to the light of day, exists then for a few moments, more vividly, more intensely. People are deeply nourished by the process of creating wholeness because there is a direct connection between the living structure of the world and the achieved person-ness we experience in ourselves...Here we come to the core connection between the field of centers - the phenomenon of life in the physical world - and the process of human growth, self-knowledge, insight, and human discovery of the true self which resides in every person. They are profoundly linked. It means that at root, the process by which a person comes in touch with wholeness - as it is in the world and as it is in the world around them, and as it is inside themselves - the more, then, that person actually discovers the meaning of their own existence, sees himself accurately in relation to phenomena, and the more that person becomes aware of the real structure which exists inside him and which links him to the universe.

In order to create living structure, we need to please ourselves. And you need only please yourself. But you must please yourself truly. And to do that you must first discover your own true self, come close enough to it, and to listen to it, so that I can be pleased. It all comes down to self-awareness and authenticity

The best things are always childlike, vulnerable. I move towards the vulnerable by asking what I would really like, if I were doing it for myself and only myself. Therefore, the fundamental question we have to ask as we produce order is: does it create feeling in me, does it make me feel more whole within myself, when I confront it? This childish level of awareness is not normally available to us. Indeed, paradoxically, it is only the awareness of order which can allow us to release ourselves enough to even get this level of awareness...What I have described in these 4 books is the structural part of what you need in order to reach this human childlike part of yourself. It works because living structure - what I call the field of centers - really is a mirror of the human heart. It is only knowledge of this structure, and the practice of making it, which gives you a key to unlock your own heart

What pleasing yourself truly IS, is the process in which we create living structure...Creating living structure is to be attained, in the end, by the greatest and most sublime process which can happen: that each person lives, works, exists, in such a fashion that they truly please themselves

It is worth really contemplating this fact. For when you finally realize that these two things, 1) pleasing yourself and 2) doing what is right is one and the same, you will not only feel free to do them, but you will also have reached a deeper level in your understanding. At that stage, you will finally understand how the oneness of some system in the universe is not only an abstract thing outside your own self, but that it is also finally and truly personal, the most personal thing there is. All that I have written in these four books leads, in the end, to the core of what is most vulnerable, most personal in us.

This brings me, then, to a last aspect of the process which produces life in things, a necessary state of mind. The core of this necessary state of mind is that you make each building in a way which is a gift to God. It belongs to God. It does not belong to you. It is made to serve God, to glorify God. It is not made to glorify you. Perhaps, if anything, it humbles you. Of course, I do not say this with any intention to suggest that this state of mind is specifically Christian...The essence of this state of mind is that the building must not shout. Emotionally, it must be completely quiet...The reason why I must try and make the building as a gift to God is that this state of mind

is the only one which reliably keeps me concentrated on what is, and keeps me away from my own vainglorious and foolish thoughts

The more any portion of space is unified, the more inseparable it becomes from all the rest. So, in the end, the intricacy and richness of a beautiful thing does not arise from the desire to make something rich or intricate, it only arises from the particular desire to make it perfectly one in itself, and with the world. It is perhaps surprising, but necessary to recognize, that I cannot make a thing which has this not-separateness, unless I honestly want it. That means I must give up my wish to draw attention to myself. I must honestly want the thing which I am making to become part of the greater world, inseparable from it. In order to see, or feel, or listen for the glimmers of the I, it is necessary to be in a very definite state of mind. I have to want to be not-separate...It requires definite intention to become one with the world

This is, perhaps, the central mystery of the universe: that as things become more unified, less separate, so also they become most individual, and most precious

## *The Nature of Order: The Phenomenon of Life (Book 1)*

### Summary

1. In these books, I have tried to show that there are shareable areas of human experience which lie beyond the areas presently touched by science. I have set myself the task of trying to raise these new matters - the deeper issues which mechanistic science has not so far dealt with - to the level of knowledge we are used to, from having a culture based on science...This is valuable because it is based on the same high standard as science, but in a new realm of social existence. We only allow ourselves to claim we know something if that "something" is shareable - in principle - even if it is in the realm we call feeling or experienced wholeness. That is the breakthrough I may perhaps have made. If I am right, the world of science has been extended. I have simply found a way of taking the scientific standard of shared knowledge based on common observation, and extended this idea so that it covers inner realities, not only outer ones

### Key Takeaways

1. In what follows I shall try to show that there is a way of understanding order which is general and does do justice to the nature of building and of architecture. It is a view which, I hope, is adequate to understanding the intuitions we have about beauty and the life of buildings. It is a view which tells us what it means for a building to be a great building, and when a building is working properly. It is, I believe, a common-sense and powerful view, with practical results. **The life which appears is an attribute of space itself, life is structural**
2. **One of my key claims is that all space and matter, organic or inorganic, has some degree of life in it, and that matter/space is more alive or less alive according to its structure and arrangement. Another claim is that all matter/space has some degree of "self" in it, and that this self, or anyway some aspect of the personal, is something which infuses all matter/space, and everything we know as matter but now think to be mechanical. If either of these claims comes, in future, to be considered true, that would radically change our picture of the universe.** Indeed, one might then say that the universe as we have known it for the last 400 years, even in the exciting and fascinating versions of physics

and cosmology which have come under discussion in recent decades, would then have to be replaced by a fundamentally different and more personal view of matter.

3. **Every form of order has some degree of life in it. Thus life is not a limited mechanical concept which applies to self-reproducing biological machines. It is a quality which inheres in space itself, and applies to every brick, every stone, every person, every physical structure of any kind at all, that appears in space. Each thing has its life.**
4. I managed to identify 15 structural features which appear again and again in things which do have life...The 15 ways in which centers can help each other come to life. In effect, the 15 properties are the glue, through which space is able to be unified. The 15 properties provide the ways that centers can intensify each other. Through the intensity of centers, space becomes coherent. As it becomes coherent, it becomes alive. The 15 properties are the "ways" it comes to life
  1. Levels of scale
  2. Strong centers
  3. Boundaries - help product and maintain the core (stability and coherence)
  4. Alternating repetition
  5. Positive Space
  6. Good shape
  7. Local symmetries
  8. Deep interlock and ambiguity
  9. Contrast
  10. Gradients
  11. Roughness
  12. Echoes - designs which are deeply familiar, fractal, but we're not quite sure why
  13. The void - at the heart of perfect wholeness is a void, like water, infinite in depth, surrounded by and contrasted with the clutter of the stuff and fabric all around it...The calm is needed to alleviate the buzz
  14. Simplicity and inner calm - Wholeness, life, has a way of being simple. In most cases, this simplicity shows itself in a geometrical simplicity and purity, which has a tangible geometrical form. It is a quality which is essential to the completion of the whole. It has to do with a certain slowness, majesty, quietness, which I think of as inner calm...The quality comes about when everything unnecessary is removed. All centers that are not actively supporting other centers are stripped out, cut out, excised. Wheat is left, when boiled away, is the structure

in a state of inner calm. It is essential that the great beauty and intricacy of ornament go only just far enough to bring this calm into being, and not so far that it destroys it...Simplicity and inner calm is the Occam's razor of any natural system: each configuration occurring in nature is the simplest one consistent with its conditions. The surface of a boiling fluid takes the shape which has least energy per unit mass. Many naturally occurring forms are given by minimum principles of this kind

15. Not-separateness - The last of these properties - ultimately perhaps the most significant - is not-separateness, connectedness. What not-separateness means, quite simply, is that we experience a living whole as being at one with the world and not separate from it - according to its degree of wholeness...It is that quality which comes about from each center, to the degree it is connected to the whole world. A thing which has this quality feels completely at peace because it is so deeply connected to the world around it
5. Life occurs to the degree that centers help each other and cement their wholeness: the helping between centers is caused by 15 properties, and on the recursive appearance of these properties among the centers from which wholeness is made
6. 90% of what all humans feel are all the same, 10% is different
7. **Order can't be described fully in a mechanical way. It is a harmonious coherence of what simply exists, melted unity, deepest order we are aiming for. A purely mechanistic view leads to absurd, non-living designs when the aim should be a building which has profound life and order**
8. In large part, I am hoping to extend the discussion of what is false and true to statements of value. Truth is not only objective, but also directly linked to people's feelings. This extended idea of objective truth will allow statements about relative harmony, wholeness, and so forth to be judged as true or not true. In this view, these kinds of statements are not left as private intuitive opinions or agendas, but describe the structure of things in the world as they are
9. Wholeness
  1. Wholeness = local parts exist chiefly in the relation to the whole, and their behavior and character and structure are determined by the larger whole in which they exist and which they create...The whole, the wholeness as a structure, always comes first. Everything else follows from this wholeness, and from the centers and sub-centers which are induced within it. The wholeness is entirely distinct

from the parts which appear in that wholeness. It is a field-like structure, a global, overall effect.

2. My argument is that the existence of wholeness is something real in the world, whether we choose to see it or pay attention to it, or not. It is a mathematical structure which exists in space. I believe that a holistic view of space - which shows how structure appears in space as a whole, as a result of local symmetries and centers - follows from careful observation of what exists
3. **I have attempted to draw attention to the idea that life, as a phenomenon, occurs not only in living organisms and ecological networks. It is something, a quality and a structure, which occurs in all kinds of places and systems in the world, both inorganic and organic.**
4. **The things we like (from the heart) make us feel wholesome when we are near them. We also feel wholesome when we are making these things. The more accurate we are in the things we really like, in this sense of liking from the heart, the more we find out that we agree with other people about which these things are. What we like from the heart coincides with the objective structure of wholeness or life in a thing. As we get to know the "it" which we like from the heart, we begin to see that this is the deepest thing there is. It applies to all judgments - not just about buildings and works of art, but also about actions, people, everything. Somehow, the experience of real liking has to do with self. As we find out which things awaken real liking in ourselves, we find ourselves more in touch than before with our own selves.**
5. The danger of over-education is that it tends to lead to a mechanistic mindset which diminishes the ability to see wholeness.
6. **You don't search for wholeness, it comes to you. The ability to see wholeness requires an unfocused view in which we do not select what we pay attention to or force attention in a certain mental direction. Instead we see, watch, drink in the configuration of the wholeness which we can see before us. Words, concepts, and knowledge all interfere with our ability to see wholeness as it is.** To see wholeness accurately, we must not pick out those artificially highlighted centers which happen to have words as names, since these are often not the most salient wholes in the real wholeness. What we must do instead is to watch, quietly, receptively and in an unfocused state, for those centers which are most salient in the real configuration as it is

7. A thing is truly personal when it touches us in our humanity. Therefore, the personal is not idiosyncratic, but universal. It refers to something true and fundamental in a thing itself. I believe all works which have deep life and wholeness in them are personal in this sense. Wholeness = happiness. The ultimate criterion for whether something works in nature, just as in buildings, therefore also depends on the extent to which it resembles the healthy human self. The connection between order and feeling is fundamental. Profound order makes us feel our own existence. When we experience something which has deep wholeness, it increase our own wholesomeness. The deeper the wholeness or life which we meet in the world, the more deeply it affects our own personal feeling
8. Functional and feeling are one and the same, utility = beauty. As a result of real life, real need - nature, cottages, etc. have more life. They have functional requirements
9. This is why we need the mirror of the self test. It is an instrument that not only helps us discover living structure and see living structure accurately: it also helps us to discover what we truly like
10. The idea that truth is to be found in the self, not in the world beyond ourselves seems questionable from nearly any reasonable empirical point of view...But, in all soberness, I believe this is simply true.
11. In aikido, practitioners are asked to compare the inner state they find themselves in when comparing two actions. They are trained to discern and then to use their inner awareness of relative greater harmony in themselves as a measure of the goodness of the action contemplated. If we can train ourselves in the same way, we too can become instruments to measure the system's objective degree of life and wholeness. Over time, we can recognize and move toward that wholeness and the task of learning to distinguish these states in oneself is the main method by which a person can make progress...All this hinges on the fact that when we pay attention to our own wholeness, we find that the degree to which conditions in the external world do increase our wholeness, is predictable. It is, in the end, this measuring technique that provides one mainstay of the claim that degree of life is an empirically observable quality in the world
12. **Wholeness and real liking has to do with staying power, duration and not fads**
13. **External structures influence internal freedom.** The right kind of physical environment, when it has living structure, nourishes freedom of the spirit in

human beings. In the wrong kind, lacking living structure, freedom of the spirit can be destroyed or weakened. If I am right, this will suggest that the character of the physical world has impact on possibly the most precious attribute of human existence. It is precisely life - the living structure of the environment - which has this effect. The best environment is one in which each person can become as alive as possible - that is as vibrant intellectually, physically, morally, and in which people can reach, as far as possible, their own potential as human beings. One may assume, too, that each person naturally does everything possible, to be alive. Freedom lies in the ability a person has to react appropriately to any given circumstance. The perfectly free human being is a person who, no matter what she or he encounters, can act appropriately

14. **There is, in effect, a stress reservoir in the body. The amount of stress being coped with fills this reservoir, to different levels at different times. But as the stress reaches the top of this reservoir, the organism's ability to deal effectively with the stress decreases. This then gives rise to the "stress" as used in its popular meaning.** The organism is overloaded...Perhaps the most important finding of modern research on stress is that this stress is cumulative, because it is all in one currency, so each seemingly disparate stress effects fills the same stress reservoir. Almost any unresolved problem, even when small, adds to the reservoir of stress, and can reduce a person's ability to function well. So long as challenges faced are within the limits of the stress reservoir, a person is actively solving problems, and becomes more alive, more capable, more rewarded in the process of meeting the challenges.

15. Thus life itself is a recursive effect which occurs in space. It can only be understood recursively as the mutual intensification of life by life. The field of centers, which intensifies centers by virtue of their pure geometry, then creates life through this helping action in the geometric field

10. **[Mach's Principle](#) - behavior of any one particle is affected by the whole universe**

1. Dostoevsky had a similar belief where every human was responsible for every other human and their actions. It's insane, but to me there also seems to be something disturbingly true about it

11. Thus the bootstrap effect - the way that centers affect one another, and mutually intensify each other, conceived as the basic property of space and matter - may give us a coherent

understanding of the way that life, a new and non-mechanical phenomenon, can be created within only so-called dead matter - the "awakening" of space

**12. Perfect symmetry = death. Want local symmetry, not whole symmetry. Life = coherence.**

Things tend to be "equal" unless there are particular forces making them unequal. In addition, the existence of local symmetries corresponds to the existence of minimum energy and least-action principles. Many - perhaps all - natural systems obtain their organization and energy from the interaction of opposites. We see this in a fundamental way with elementary particles and on a biological level we see it in the contrast of male and female which exists in almost every kind of organism. It appears in the cycle of day and night. It appears in the contrast of solid and liquid phase which provides the action and catalysis in chemical reactions. More informally, it exists in the contrast of dark and light in the surface of a butterfly, which attracts the mate

**13. The more powerful a center is, the greater its influence on the wholes around it. Thus, the system of powerful centers in the world has a practical and immediate physical influence on the behavior of other nearby centers**

What I got out of it

1. A beautiful and quite radical book discussing truth, value, quality, beauty, design. If he is correct in his ideas, it would change how we'd have to think about nearly everything, from architecture to philosophy

*The Nature of Order: The Process of Creating Life (Book 2)*

Summary

1. **In book 2, the author defines conditions for a process to be living, capable of generating living structure rather than life destroying. It is all about the process - poor process, poor result. This awareness of continuous becoming is the most essential portion of the building process. It must unfold in such a way to allow wholeness to spring forth.**

Key Takeaways

1. **What is fascinating is that the hint of a conception of value which emerges dynamically from respect for existing structure. We do not need any arbitrary or external criterion of value. The value exists within the unfolding of the wholeness itself. When the wholeness unfolds unnaturally, value is destroyed. When the wholeness unfolds naturally, value is created...This gradual rubbing together of phenomena to get the right result, the slow process of getting things right, is almost unknown to us today.**
2. Real kindness is something quite different, something valuable in itself. It is a true process, not guided by the grasp for a goal, but guided by the minute to minute necessity of caring, dynamically, for the feelings and well-being of another. This is not trivial, but deep; sincerely related to human feeling; and not predictable in its end result, because the end result is not the goal. Unlike the goal-oriented picture, which is imposed intellectually on our substance as persons, real kindness is a process true to our essential human instinct and to our knowledge of what it means to be a person. But the machine-age view showed a process like kindness as being oriented toward a goal, just as every machine too has its purpose - its goal, what it is intended to produce.
  1. *Not just goal oriented, but process oriented*
3. **The wholeness is essentially preserved at each step, and the new structure is introduced in such a way that it maintains and extends - but almost never violates - the existing structure. It is globally structure-preserving. That is why the unfolding seems smooth**
  1. *All about process - not just what we do, but how we do it. 9/10 of the beauty is from the process itself*
4. Living process to be guided by feeling - adherence to the whole. If this were to be truly understood and followed, it would change nearly everything we know about modern

society. This is a gargantuan shift, but humans and human nature are more in tune with feelings than with mathematics...The idea that feeling itself can become criterion and instrument - that what is done, no matter how large or how small, can become personal, connected to the personal self of all human beings - and that this process then opens the door to a new form of society. That is truly revolutionary. That can shake the world

5. You might say that this is all just common sense. I believe you would be right. But this common sense flies in the face of many processes which 20th century architecture and construction practice set in place. When we try to make a building in such a way that it gets its life, what we have done here is the most natural way to do it: we get one thing right at a time. We do what we know. We get things right as we come to understand them. That gets good results. Expressed in the language of this book, it is a process of unfolding in which centers are established, modified, improved, one at a time
6. **Principle of Least Action - the evolution of any dynamic system will always follow the path of least work or the least potential energy. I postulate that every natural system has a disposition, a tendency caused by the most simple way forward for the system to move in the direction which preserves wholeness. By this I mean that as the system evolves, it destroys these symmetries and larger centers as little as possible. It maintains as much of the structure of symmetries and centers as possible, and destroys as little of the structure and symmetries as can be managed while yet moving forward...All that is required is that this mechanical procedure is sensitive to the whole and is influenced and guided by the structure of the whole. That is the secret of morphological emergence in natural phenomena. It is also, I maintain, the secret of all artistic and constructive human-inspired acts of creation**
7. **This is a startling and new conception of ethics and aesthetics. It describes good structure as a structure which has unfolded "well," through these transformations without violating the structure that exists. The structure we know as living structure, is just that kind of structure which has unfolded smoothly and naturally, arising step by step from what exists, preserving the structure of what exists, and allowing the "new" to grow in the most natural ways as a development from the structure of "what is."** This startling view provides us with a view of ethics and aesthetics that dignifies our respect for what exists and treasures that which grows from this respect. It views with disfavor only that which emerges arbitrarily, without respect for what exists, and provides a vision of the world as a horn of shimmering plenty in which the "new" 'grows unceasingly from the structure that exists around us already. That this horn of plenty is inexhaustible, and that we may

conceive an everlasting fountain of novelty without ever having to beat ourselves over the head for the sake of novelty per se - that may perhaps be one of the greatest potential legacies of this new view of the world

1. *What is natural, of value, is that which unfolds naturally from the whole that exists*

2. *Do one small, good thing, then another, and another...*

**8. Growing bone adds material at the point where stress is greatest**

**9. Paying attention to the wholeness = love of life**

10. By preserving structure, one always gets surprising results. The creative work is to illuminate, to reveal what is already there...but this takes depth of perception and love...certainly profound knowledge of the nature of space and its structure. To do it, successfully, we are called upon to make another crucial revision in our views about the nature of things: we have always assumed that the process of creation is a process which somehow inserts entirely new structure into the world...in the form of inventions, creations, and so on. Living process teaches us that wholeness is always formed by a special process in which new structure emerges directly out of existing structure, in a way which preserves the old structure, and therefore makes the new whole harmonious. Thus the process of making wholeness is not merely a process which forms centers or the field of centers in space...it is a process which gives special weight to the structure of things as they are. The enigma is that something new, unique, previously unseen - even innovative and astonishing - arises from the extent to which we are able to attend to what is there, and able to derive what is required from what is already there...and that all this, then, will lead to astonishing surprises. It is a process in which we most deeply express our reverence for what exists

11. When we published *The Pattern Language* for the Peruvian houses, people in Peru said that our pattern language and our houses we designed from the pattern language were a more accurate reflection of Peruvian reality than even the Peruvian architects had managed...The essential technique in the observation of centers, in any social situation, and in any culture, is to allow the feelings to generate themselves inside you. You have to say, "What would I do if I were one of the people living here, what would it be like for me?" thus inserting yourself into the situation and then using your own common sense and feelings as a measuring instrument

1. [Galilean Relativity](#)

12. Bottom-Up vs. Top-Down, Organic / Iterative vs. Planned, Generated, Designed

1. All the well-ordered complex systems we know in the world, all those anyway that we view as highly successful, are generated structures, not fabricated structures...Complex, generated structure cannot be arrived at in any other way. One structure is established. The next structure is then made to appear within the structure, and from that structure. Each stage develops the previous stage, each one creating the conditions from which the next can be created, and from which it flows. It is in this process that the 15 properties, and their enormous density, can be achieved. That is the secret of the whole thing
- 13. Everything in nature is symmetrical unless there is a good reason for it not to be. All things are similar and the things that are different must be different. This is a profound idea and if it could be expressed precisely, it would be the rule from which everything, all form, derives**
- 14. At each step, get rid of everything that is not required - "making life" and "being simple" are the same...I believe that the drive toward simplicity is possibly the deepest feature of living process, and its most essential feature. Anything that does not have tis drive toward simplicity cannot, really, be taken seriously as a living process. And this is a very tough criterion, a hard task-master**
- 15. A living process is a step-by-step adaptive process, which goes forward in small increments, with opportunity for feedback and correction at every increment. It is always the whole which governs in a living process. Even when only latent, whatever greater whole is latent is always the main focus of attention and the driving force which controls the shaping of parts. The entire living process - from beginning to end - will be governed and guided and moved forward by the formation of living centers in such a way that the centers help each other**

What I got out of it

1. Always be structure-preserving, seeking to naturally unfold what is already there, keeping wholeness and life. This process is what creates beauty, harmony, balance, life

*The Nature of Order: A Vision of a Living World (Book 3)*

Summary

1. **Architecture becomes living when non-mechanical, fluid, unique to its circumstances, responds to what is there rather than impose on what is there (similar to aikido), grow with nature, arise out of nature, looseness and symmetry. Deep feeling appears in these buildings, as it does in nature, because they emerge through subtle adaptation from the whole, and because at each stage of their unfolding they support the whole**

Key Takeaways

1. **A proper environment makes you feel like you belong to it - a feeling of joy and connectedness that hinges on the sensation that we have the right to be there, that we belong to the world and it belongs to us. Only living process can generate belonging. When living processes are working well, our belonging comes about naturally**
2. Buildings should enliven the land they're on
3. Seek an interlocking of positive and negative space. What is most remarkable of all, is that the structure which is created by a feeling for centers and by a conscious and deliberate aim towards the feeling of the whole, will often turn out to be an efficient structure...Apparently good engineering structure follows, directly or indirectly, from the use of living process
4. Save 20% of building cost towards gardens and outside structures
5. Shared vision not gotten through a meeting, but from talking to each person quietly, one at a time, drawing from each individual his, her, their most important feelings, and their most authentic visions
6. In each case, the forms, because they are generated in time, not designed at the drawing board, display qualities of life, and do have life...One of the most fundamental aspects of a living world is that every part of it will be unique. If we learn to use a living process well, its most essential nature will be to create structures which are unique, because they are perfectly adapted to their local unique conditions
7. In general, the geometry will be created by differentiation, not by addition or accretion, the parts given their dimensions by differentiating operations within the space of the land, or within the space of the room where the thing is being made

8. City planning comes about as a sequence of adaptive acts, a result of unfolding in time. It unfolds directly from people's ordinary instincts
9. Close your eyes and dream up your idyllic space - ideal working conditions, natural centers, windows, entrance, main work surface, daylight, working chairs, computer setup, reclining chair, different chairs, thick walls, filing, desk lights, comfortable sofa
10. Fine structure - every element has to have a living center, details that make it come to life. The field of centers is a convenient way of representing the substance of our minds. It is the substance itself which actually creates the field. Life will not exist in a building unless it exists in the actual physical fabric of the building, in all the details of the way the thing is made. The actual physical geometry of the foundation, walls, windows, roof edge, boards, tiles, plaster, paint work, moldings is itself crucial to the existence of life. The sensuous quality of the building comes from its detail; substance is fundamental to beauty. Wholeness will not exist in the large unless it also exists in the small...and for it to exist in the small, it must be made. The large scale order is absolutely interwoven and dependent on the tiniest details of the microstructure. The large scale order depends for its existence on the most subtle ordering of details at the smallest subatomic scale. And the same is true, and must be true, in architecture. If we are trying to construct a field of centers in a building, we must realize the field will not be whole, cannot even sustain itself as a structure, unless it is carried through from the larger scale structure to the fine structure. The macrostructure of the field is dependent on the microstructure of the field. If it is ignored or treated without respect, the larger field will fail
11. Unfolding vs. construction / production - this must happen in the actual construction of the building, not only on paper. This is incredibly difficult to do in practise. Same is true for the details, the colors you use. If it is living, it will have its own, luminous, inner light
12. In a building which has life, whatever is made is always the simplest thing consistent with its necessities of feeling and with the close and continuous attention to feeling while it evolves into form. This, I think, is the closest I can come to describing the core of architecture. When everything is going right, when the fundamental process is used well, what comes out is not only natural, not only simple, not only living structure. It has, too, an archetypal quality - something savage (wild, untamed)
13. Each living structure has the minimal structure for its situation that carries weight of feeling, leading to a structure in which local symmetries are so densely packed that the highest possible density of local symmetries occurs, but without having an overall symmetry

**14. In the best cases, in the cases which have the most life, the building form will most often by interwoven in some fashion with nature itself. In the best cases, it will seem, almost indistinguishably, to be part of nature, thus forming a seamless whole. The clearest way I can say this, is to point out that it will - in this case - seem extremely ordinary. It will appear normal, and be normal**

What I got out of it

1. Pragmatic implications of Alexander's ideas as it relates specifically to architecture and construction

*The Nature of Order: The Luminous Ground (Book 4)*

Summary

1. **Quantum mechanics would not have been of more than academic interest to a few university professors if it were not for its immense field of practical applications, such as in electronics. Here, too, in the sphere of building, we have a practical aim. We wish to create living structure in the build world; we wish to apply this model of the universe in order to reproduce the phenomena that we are interested in.**

Key Takeaways

1. The "I" is that which connects all of us. It may occur in a leaf or in a picture, in a house, in a wave, even in a grain of sand, or in an ornament. It is not ego. It is not me. It is not individual at all, having to do with me, or you. It is humble and enormous; that thing in common which each of us has in us. It is the spirit which animates each living center. **When I am building, I am searching for the "I" – the myself, lying within all things. It is that shining something which draws me on, which I feel in the bones of the world, which comes out of the earth and makes our existence luminous ...I can feel it, nearly always, almost before I start. Or, rather, I do not usually let myself start until I can feel this thing.**
  1. *The life in a structure can be measured by the extent that it awakens this connection to the personal*
2. My hypothesis is that all value depends on a structure in which each center, the life of each center, approaches this simple, forgotten, remembered, unremembered "I"...that in the living work each center, in some degree, is a connection to this "I", or self...that the living steel and concrete bridge is one in which each part is connected to this self, awakens it in us...that the living song is one in which each phrase, each note, is connected to this self, awakens it in us, reminds us of ourselves...I believe that the ultimate effort of all serious art is to make things which connect with this I of every person. This "I" , not normally available, is dredged up, forced to the light, forced into the light of the day, by the work of art...Effectively, what all this amounts to is that in the process of making things through living process, gradually I approach more and more closely knowledge of what is truly in my own heart...I learned to value only that which

truly activates what is in my heart. I came to value those experiences which truly activates what is in my heart. I came to value those experiences which activate my heart as it really is. I sought, more and more, only those experiences which have the capacity, the depth, to activate the feeling that is my real feeling, in my true childish heart. And I learned, slowly, to make things which are of that nature

3. Gradually, I began to recognize that in the midst of that cleverness, which I never truly understood anyway, the one thing I could trust was a small voice, a tiny soft-and-hard vulnerable feeling, recognizable, which was something I actually knew. Slowly that knowledge grew in me. It was the stuff which I was actually certain of - not because it aped what others had taught me, but because I knew it to be true of itself, in me
4. **Flaw of a mechanical world view is that it does not and cannot take into account our inner, subjective lives. Matter and mechanisms compared to actual experience. This is what Whitehead calls the bifurcation of nature and I believe we can again weave them together into a united, single picture**
5. One of the key questions I'm seeking to answer is "What is the life that we discern in these things?" The buildings that have life create relatedness between the person and the universe. This relatedness is primary, inherent and not there because of you. Centers are 'beings' - having life and related to you - becoming "I-like". With practice, you can discern the things that have more life - those that are genuinely related to your self - and those which are less so typically found in innocence, playfulness, openness, coupled with iteration and unfolding
6. 4 Propositions
  1. **Each center is a focused zone of space which may be characterized by saying that, to some degree, space in that zone itself comes to life. Life is an attribute of space itself and increases in some measure according to the organization of the space. The degree of life of any given portion of space, thus appears like a color, or like an overall attribute - a quality which appears in the space itself, along with the structural organization that also signals its appearance**
  2. To the degree a center is a living center, it is also a picture of the true self, and - very startlingly - has this character for all people, not just for any individual
  3. The structure-preserving transformations which continually modify one wholeness in space and replace it by another that preserves the structure of the first, slowly cause space to be filled with unfolded I-like centers

4. Only a deliberate process of creating being-like (or self-like) centers in built structure throughout the world, encourages the world to become more alive
7. The more life something has, the more it seems to internally glow
8. The self exists 'underneath' all things and the greater the connection to this, the brighter a thing shines, the more life it has. It is luminous, connected directly to wholeness, to heaven, to "I", to unity
9. Color Properties
  1. Hierarchy of colors
  2. Colors create light together
  3. Contrast of dark and light
  4. Mutual embedding
  5. Boundaries and hairlines
  6. Sequence of linked color pairs
  7. Families of color
  8. Color variation
  9. Intensity and clarity of individual color
  10. Subdued brilliance
  11. Color depends on geometry
10. **A thing does not get its unity from being beautiful. The unity comes from the fact that the various centers are harmoniously connected, and that every center helps every other center. That is the great thing and it is this which causes real unity to exist. But above all, it comes from the fact that in the thing, throughout the thing, we see the I in every part, at every scale. We see only one I, the same I, shining out from every part.**
11. **Making wholeness heals the maker** - When you make a beautiful thing, the depth of the person within becomes more vivid, lives more intensely for a moment. In each of us, a person is existing or waiting to exist. This person - the most free version of that person - does exist, occasionally, for brief glimpses. When one of us becomes free, this latent person inside comes to the light of day, exists then for a few moments, more vividly, more intensely. People are deeply nourished by the process of creating wholeness because there is a direct connection between the living structure of the world and the achieved person-ness we experience in ourselves...Here we come to the core connection between the field of centers - the phenomenon of life in the physical world - and the process of human growth, self-knowledge, insight, and human discovery of the true self which resides in every person. They are profoundly linked. It means that at root, the



process by which a person comes in touch with wholeness - as it is in the world and as it is in the world around them, and as it is inside themselves - the more, then, that person actually discovers the meaning of their own existence, sees himself accurately in relation to phenomena, and the more that person becomes aware of the real structure which exists inside him and which links him to the universe.

12. **In order to create living structure, we need to please ourselves. And you need only please yourself. But you must please yourself truly. And to do that you must first discover your own true self, come close enough to it, and to listen to it, so that I can be pleased. It all comes down to self-awareness and authenticity**
13. **The best things are always childlike, vulnerable.** I move towards the vulnerable by asking what I would really like, if I were doing it for myself and only myself. Therefore, the fundamental question we have to ask as we produce order is: does it create feeling in me, does it make me feel more whole within myself, when I confront it? This childish level of awareness is not normally available to us. Indeed, paradoxically, it is only the awareness of order which can allow us to release ourselves enough to even get this level of awareness...What I have described in these 4 books is the structural part of what you need in order to reach this human childlike part of yourself. It works because living structure - what I call the field of centers - really is a mirror of the human heart. It is only knowledge of this structure, and the practice of making it, which gives you a key to unlock your own heart
14. **What pleasing yourself truly IS, is the process in which we create living structure...Creating living structure is to be attained, in the end, by the greatest and most sublime process which can happen: that each person lives, works, exists, in such a fashion that they truly please themselves**
15. It is worth really contemplating this fact. For when you finally realize that these two things, 1) pleasing yourself and 2) doing what is right is one and the same, you will not only feel free to do them, but you will also have reached a deeper level in your understanding. At that stage, you will finally understand how the oneness of some system in the universe is not only an abstract thing outside your own self but that it is also finally and truly personal, the most personal thing there is. All that I have written in these four books leads, in the end, to the core of what is most vulnerable, most personal in us.
16. **This brings me, then, to a last aspect of the process which produces life in things, a necessary state of mind. The core of this necessary state of mind is that you make each**



building in a way which is a gift to God. It belongs to God. It does not belong to you. It is made to serve God, to glorify God. It is not made to glorify you. Perhaps, if anything, it humbles you. Of course, I do not say this with any intention to suggest that this state of mind is specifically Christian...The essence of this state of mind is that the building must not shout. Emotionally, it must be completely quiet...The reason why I must try and make the building as a gift to God is that this state of mind is the only one which reliably keeps me concentrated on what is, and keeps me away from my own vainglorious and foolish thoughts

17. The more any portion of space is unified, the more inseparable it becomes from all the rest. So, in the end, the intricacy and richness of a beautiful thing does not arise from the desire to make something rich or intricate, it only arises from the particular desire to make it perfectly one in itself, and with the world. It is perhaps surprising, but necessary to recognize, that I cannot make a thing which has this not-separateness, unless I honestly want it. That means I must give up my wish to draw attention to myself. I must honestly want the thing which I am making to become part of the greater world, inseparable from it. In order to see, or feel, or listen for the glimmers of the I, it is necessary to be in a very definite state of mind. I have to want to be not-separate...It requires definite intention to become one with the world
18. This is, perhaps, the central mystery of the universe: that as things become more unified, less separate, so also they become most individual, and most precious

What I got out of it

1. A beautiful, thought provoking ending to what was a life changing series for me

## *Notes on the Synthesis of Form*

### Summary

1. Discusses the idea of the diagrams. These diagrams, which in my more recent work, I have been calling patterns, are the key to the process of creating form...The idea of a diagram, or pattern, is very simple. It is an abstract pattern of physical relationships which resolves a small system of interacting and conflicting forces, and is independent of all other forces, and of all other possible diagrams. The idea that it is possible to create such abstract relationships one at a time, and to create designs which are whole by fusing these relationships - this amazingly simple idea is, for me, the most important discovery of the book

### Key Takeaways

1. Must design to fit the context of its use
2. Poincare once said, "sociologists discuss sociological methods; physicists discuss physics."
3. Plato - "First, the taking in of scattered particulars under one Idea, so that everyone understands what is being talked about...Second, the separation of the Idea into parts, by dividing it at the joints, as nature directs, not by breaking any limb in half as a bad carver might."
4. **The ultimate object of design is form...It is based on the idea that every design problem begins with an effort to achieve fitness between two entities: the form in question and its context. The form is the solution to the problem; the context defines the problem...The context is that part of the world which puts demands on this form; anything in the world that makes demands of the form is context.** Fitness is a relation of mutual acceptability between these two. In a problem of design we want to satisfy the mutual demands which the two make on one another. We want to put the context and the form into effortless contact or frictionless coexistence
5. In the unselfconscious culture a clear pattern has emerged. Being self-adjusting, its action allows the production of well-fitting forms to persist in active equilibrium with the system. The way forms are made in the selfconscious culture is very different. I shall try

to show how, just as it is a property of the unselfconscious system's organization that it produces well-fitting forms, so it is a property of the emergent self-conscious system that its form fit badly

1. *It seems to be a universal truth that small, constant steps is the ideal form of growth (PIPER). If you can achieve this with occasional positive punctuated equilibria, you have something special - evolution, mastery, startups, relationships, investing... This allows for quick learning / adaptation as well as builds in antifragility*
6. Be careful of verbal constructs as we often lose the ability to modify them... We must keep our ability to see beyond them
7. The problem to designing to context will be solved as the designer gets more and more control over the process of design
8. It is the aim of science to give such a unified description for every object and phenomenon we know. The task of chemistry (and it has been remarkably successful in this) is to relate functional and formal descriptions of chemical compounds to one another, so that we can go backwards and forwards between the two, without loss in understanding. The task of physiology has been to relate the functional behavior of the body to the organs we observe in anatomy. Again, it has been reasonably successful. The solution of a design problem is really only another effort to find a unified description. The search for realization through constructive diagrams is an effort to understand the required form so fully that there is no longer a rift between its functional specification and the shape it takes... **A design problem is not an optimization problem. In other words, it is not a problem of meeting any one requirement or any function of a number of requirements in the *best possible way*. For most requirements it is important only to satisfy them at a level which suffices to prevent misfit between the form and the context, and to do this in the least arbitrary manner possible**
9. **Any state of affairs in the ensemble which derives from the interaction between form and context, and causes stress in the ensemble, is a misfit**
10. **The designer as a form-maker is looking for integrity (in the sense of singleness); he wishes to form a unit, to synthesize, to bring elements together. A design program's origin, on the other hand, is analytical, and its effect is to fragment the problem.**
11. What is it about the internal structure of any problem that makes it hard to solve? In 9/10 cases, we cannot solve it, because we cannot grasp it; we cannot see what the internal structure is "driving at."

12. If we break the problem apart in such a way that its clusters of variables are as richly connected, internally, as possible, we shall have clues to those physical aspects of the problem which play the most important functional part of the problem and are therefore most likely to furnish handles for the designer's comprehension
13. The organization of any complex physical object is hierarchical. It is true that, if we wish, we may dismiss this observation as an hallucination caused by the way the human brain, being disposed to see in terms of articulations and hierarchies, perceives the world. **On the whole, though, there are good reasons to believe in the hierarchical subdivision of the world as an objective feature of reality.** Indeed, many scientists, trying to understand the physical world, find that they have first to identify its physical components, much as I have argued in these notes for isolating the abstract components of a problem. You cannot understand the human body until you recognize the nervous system, hormonal system, vasomotor system, heart, arms, legs, trunk, head, etc. You cannot understand chemistry without knowing the pieces of which molecules are made
14. This is the general rule. Every aspect of a form, whether piecelike or patternlike, can be understood as a structure of components. Every object is a hierarchy of components, the large ones specifying the pattern of distribution of the smaller ones, the small ones themselves, though at first sight more clearly piecelike, in fact again patterns specifying the arrangement and distribution of still smaller components. Every component has this twofold nature: it is first a unit, and second a pattern, both a pattern and a unit. Its nature as a pattern specifies the arrangement of its own component units. It is the culmination of the designer's task to make every diagram both a pattern and a unit
  1. *Both a wave and a molecule...*

#### What I got out of it

1. An absolutely beautifully written book that is thought provoking. Got me to think about design differently, how it's done, it's purpose, why it's challenging, what "good design" looks like

## *A Pattern Language*

### Summary

1. A Pattern Language is the second in a series of books which describe an entirely new attitude to architecture and planning. The books are intended to provide a complete working alternative to our present ideas about architecture, building, and planning - an alternative which will, we hope, gradually replace current ideas and practices

### Key Takeaways

1. Overview
  1. The elements of this language are entities called patterns. Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice.
  2. In the patterns marked with two "\*\*\*", we believe that we have succeeded in stating a true invariant...the pattern describes a deep and inescapable property of a well-formed environment
  3. **We believe that this language which is printed here is something more than a manual, or a teacher, or a version of a possible pattern language. Many of the patterns here are archetypal - so deep, so deeply rooted in the nature of things, that it seems likely that they will be a part of human nature, and human action, as much in five hundred years, as they are today.** We doubt very much whether anyone could construct a valid pattern language, in his own mind, which did not include the pattern Arcades (119) for example, or the pattern Alcoves (179)
  4. A pattern language has the structure of a network. This is explained fully in The Timeless Way of Building. However, when we use the network of a language, we always use it as a sequence, going through the patterns, moving always from the larger patterns to the smaller, always from the ones which create structures, to the ones which then embellish those structures, and then to those which embellish the embellishments...Since the language is in truth a network, there is no one sequence which perfectly captures it. But the sequence which follows, captures



the broad sweep of the full network; in doing so, it follows a line, dips down, dips up again, and follows an irregular course, a little like a needle following tapestry

5. **Finally, a note of caution. This language, like English, can be a medium for prose, or a medium for poetry. The difference between prose and poetry is not that different languages are used, but that the same language is used, differently. In an ordinary English sentence, each word has one meaning, and the sentence too, has one simple meaning. In a poem, the meaning is far more dense. Each word carries several meanings; and the sentence as a whole carries an enormous density of interlocking meanings, which together illuminate the whole. The same is true for pattern languages. It is possible to make buildings by stringing together patterns, in a rather loose way. A building made like this is, an assembly of patterns. It is not dense. It is not profound. But it is also possible to put patterns together in such a way that many many patterns overlap in the same physical space: the building is very dense; it has many meanings captured in a small space; and through this density, it becomes profound...All 253 patterns together form a language**
6. At the core is the idea people should design their homes, streets, and communities. This idea comes from the observation most of the wonderful places of the world were not made by architects, but by the people.
7. **Every building, every room, every garden is better, when all the patterns which it needs are compressed as far as it is possible for them to be. The building will be cheaper; and the meanings in it will be denser. It is essential, then once you have learned to use the language, that you pay attention to the possibility of compressing the many patterns which you put together, in the smallest possible space.** You may think of this process of compressing patterns, as a way to make the cheapest possible building which has the necessary patterns in it. It is, also, the only way of using a pattern language to make buildings which are poems.
  1. *Like information theory, the more "surprise" in the shortest message delivers the most information.*
2. There are 253 total patterns, moving from the macro (towns) to the micro (individual rooms). The invariant patterns [and the patterns which stood out the most to me] are included below
  1. Independent Regions - small and autonomous regions that are independent spheres of culture

2. City Country Fingers - green, public land that sit between houses, neighborhoods, industries, etc...
3. Mosaic of Subcultures - homogenous character of modern cities kills all variety of life styles and arrests the growth of individual character
4. **Scattered Work - artificial separation of houses and work creates intolerable rifts in people's inner lives**
5. Local Transport Areas - cars kill all social life in a city so make personal, local transportation effective
6. Identifiable neighborhood - people need an identifiable spatial unit to belong to
7. Network of learning - creative, active individuals can only grow up in a society which emphasizes learning instead of teaching
8. 4-story limit - high buildings make people crazy
9. **9% parking - when the area devoted to parking is too great, it destroys the land. The physical environment creates the potential for all social communion, including even communion with the self**
10. **Men and Women - separation of sexes distorts reality and perpetuates and solidifies the distortions. Make certain each piece of the environment is made with a blend of both men's and women's instincts. Keep the balance of masculine and feminine in mind for every project at every scale (yin/yang)**
11. Activity Nodes - community facilities scattered individually through the city do nothing for the life of the city, they must have the critical mass to attract people
12. Promenade - people need a place to go see other people and to be seen
13. **Household Mix - no one stage in the life cycle is self-sufficient. People need support and confirmation from people who have reached a different stage in the life cycle, as the same time that they also need support from people who are at the same stage as they are themselves**
  1. *Galilean Relativity*
14. Old People Everywhere - old people need old people, but they also need the young, and the young people need contact with the old. The very young keep the old engaged and the old teach the young
15. Work Community - if you spend eight hours of your day at work, and 8 at home, there is no reason why your workplace should be any less of a community than your home

16. **University as a marketplace - concentrated, cloistered universities with closed administration policies and rigid procedures which dictate who may teach a course, kill opportunities for learning**
17. Market of many shops - not one massive grocery store but a series of different shops with a variety of foods and goods
18. **Housing in between - wherever there is a sharp separation between residential and nonresidential parts of town, the nonresidential areas will quickly turn to slums...Slums happen when these rhythms break down**
19. **Looped local roads - nobody wants fast through traffic going by their homes**
20. Green streets - local roads need only a few stones for the wheels of the car and most of it can still be green
21. Network of paths and cars - cars are dangerous to pedestrians; yet activities occur just where cars and pedestrians meet
22. Main gateway - any part of town will be emphasized if people have to cross a gateway to enter the boundary
23. Quiet backs - people need to be able to pause and refresh themselves with quiet in a moral natural environment
24. Accessible green - people need green open places to go to; when they are close they use them. But if the greens are more than 3 minutes away, the distance overwhelms the need
25. Small public squares - too large and they will feel deserted
26. Holy Ground - holy grounds are gateways and generally hard to reach, helping to separate normal life from the sacred
27. Common land - without common land, no social system can survive
28. **Connected play - if children don't play enough with other children during the first 5 years of life, there is a great chance that they will not have normal social lives moving forward**
29. **Grave sites - no people who turn their backs to death can be alive. The presence of the dead among the living will be a daily fact in any society which encourages its people to live**
30. **Local sports - the human body does not wear out with use, but when it is not used**
31. **The Family - the nuclear family is not by itself a viable form - several generations and cousins/aunts/uncles/close friends are needed in a single or loosely knit multiple household. The kitchen is the most vital realm**

32. **House for a small family - the relationships between children and adults is most critical. Must have 3 distinct areas - a couple's realm, a children's realm, a common area to connect them both. Each room is "owned" by the appropriate persons - a child may enter the adults room but they have to respect that they do not rule this area**
33. Self-governing workshop and offices - no one enjoys his work if he is a cog in a machine. Buddhist function of work is 3-fold: chance to utilize and develop his faculties, enable him to overcome ego-centeredness by joining with others in a common task, and to bring forth the goods and services needed for a becoming existence. Some studies have shown that the single best predictor of a long life is the extent to which he is satisfied with his job
34. Master and apprentices - the fundamental learning solution is one in which a person learns by helping someone who really knows what he is doing. Enmesh work and learning and organize work around a tradition of master and apprentices so that they can work and meet together
35. Individually owned shops - no massive conglomerates
36. Street cafe - place to relax and watch people
37. Site repair - buildings must be built on the worst land, not the best (so that the best land is left to look at and cultivate)
38. **South facing outdoors - best light and atmosphere**
39. **Positive outdoor space - purposefully designed and not simply what is left over after the building is constructed. Like yin and yang, indoor and outdoor space must always get their shape together**
40. Entrance transition - buildings with a graceful transition between the street and the inside are more tranquil than those without
41. Arcades - covered walkways at the edge of buildings play a vital role in the way that people interact with buildings
42. **Intimacy Gradient - sequence which corresponds to their degree of privateness (front is for public, back only for family and closest friends)**
43. **Indoor sunlight - right rooms facing south to make entire house sunny and cheerful**
44. **Common areas at the heart - constant informal contact among its members is crucial for survival**

45. **Couple's realm - the presence of children in a family often destroys the closeness and the special privacy which a man and wife need together. Make a special part of the house distinct from the common areas solely for the couple**
46. **Sleeping to the east - wake up with morning light**
47. **Farmhouse kitchen - make the kitchen bigger than usual and big enough to include the family room space, with enough chairs for everyone to sit, and bright and comfortable**
48. **A room of one's own - no one can be close to others, without also having frequent opportunities to be alone**
49. **Sequence of sitting spaces - put in places to sit all over the building**
50. **Communal eating - without communal eating, no human group can hold together**
51. Small meeting rooms - larger meetings leads to people getting less out of them
52. Home Workshop - as the decentralization of work becomes more and more effective, the workshop in the home grows and grows in importance
53. Light on two sides of every room - when they have a choice, people will always gravitate to those rooms which have light on two sides, and leave the rooms which are lit only from one side unused and empty
54. Outdoor room - enough enclosure around it that it takes on the feeling of a room even though it is open to the sky
55. Connection to the earth - make the boundary between building and nature ambiguous
56. Greenhouse - build a greenhouse as part of your home or office so that it is both a room of the house and part of the garden
57. **Garden - somewhere quiet and safe to sit and be with nature as well as a place to grow your vegetables and plants**
58. **Alcoves - no homogeneous room, of homogeneous height, can serve a group of people well. To give a group a chance to be together, as a group, a room must also give them the chance to be alone, in one's and two's in the same place**
59. **Window place - create a place to sit and be next to windows**
60. **Fire - there is no substitute for fire, the need for fire is almost as fundamental as the need for water**
61. **Eating atmosphere - heavy table in the center to seat everyone, with a light over it and enclose the space with walls or contrasting darkness**

62. Workspace enclosure - people cannot work effectively if their workspace is too enclosed or too exposed. A good workspace strikes the balance
  63. Thick walls - thin walls make homes feel impersonal and dead
  64. Open shelves and built in seats
  65. Secret place - a place to keep important things that almost nobody knows about
  66. Structure follows social spaces - not the other way around
  67. Root foundations - the best foundations of all are the kinds of foundations which a tree has - where the entire structure of the tree simply continues below ground level, and creates a system entirely integral with the ground, in tension and compression
  68. Radiant heat - this pattern is biologically precise formulation of the intuition that sunlight and a hot blazing fire are the best kinds of heat
  69. Different chairs - people are different sizes, they sit in different ways so furnish with a variety of different chairs
  70. Pools of light - uniform illumination serves no useful purpose whatsoever. In fact, it destroys the social nature of space and makes people feel disoriented and unbounded
  71. Things from your life - decor and the conception of interior design have spread so widely that very often people forget their instinct for the things they really want to keep around them - family pictures, remembrances, collections, old adventures
3. Other
1. We do not believe that these large patterns, which give so much structure to a town or to a neighborhood, can be created by a centralized authority, or by laws, or by master plans. We believe instead that they emerge gradually and organically, almost of their own accord, if every act of building, large or small, takes on the responsibility for gradually shaping its small corner of the world to make these larger patterns appear there
    1. *Conscious or intuitive understanding of complexity, self-organizing criticality, emergence*
  2. **Schools are designed on the assumption that there is a secret to know everything in life; the quality of life depends on knowing that secret; that secrets can be known only in orderly successions; and that only teachers can properly reveal these secrets. An individual with a schooled mind conceives of the world as a pyramid of classified packages accessible only to those who carry the proper**

**tags. New educational institutions would break apart this pyramid. Their purpose must be to facilitate access for the learner: to allow him to look into the windows of the control room or the parliament, if he cannot get in the door. Moreover, such new institutions should be channels to which the learner would have access without credentials or pedigree - public spaces in which peers and elders outside his immediate**

- 3. Have to fix the position of individual buildings, according to the nature of the site, the trees, and the sun, this is one of the most important moments in the language**

What I got out of it

1. The playbook for creating perfect environments - from entire towns down to individual rooms. Master key to tapping into people's subconscious and making them feel calm, secure, and abundance - allowing them to go all-in. Like most great books, the ideas and lessons apply far broader than simply the realm it is immediately describing. Many are time invariant and universal, tapping into deeply held and genetically programmed human universals, as Donald Brown would call them

People are deeply nourished by the process  
of creating wholeness.

*Christopher Alexander*

*www.thequotes.in*

