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adaptation - unfolding

The Unfolding Whole

How Things Work Together

A Revaluation Of Our Place In The Scheme Of Things,
and of our Work In The World

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Preface

I was very, very surprised to receive a phone call from Hank saying that they wanted to give me this honor, and very, very touched. I'm not a gregarious person and I don't move all that much in the great social world, and I thought maybe they'd forgotten all about me. So anyway, it was very, very touching and I was incredibly delighted to be asked to come here and receive this, and talk to you. So, all I can say is thank you, thank you, thank you. It is very, very lovely to be here.

This book is about the world around us: the world we make and build collectively, for ourselves.

The book elevates discussion of this down-to-earth subject, and raises it far above the contemporary notions of planning, code enforcement, development, commercial housing construction. It suggests, rather, that the building of our collective habitat and environment is possibly the most profound thing we do on Earth. It shows us how we may come to see this, and believe it. And it shows, too, that the happiness and sense of life we experience in places where we live and work, will follow directly and immediately from our way of treating this larger topic.

In order to discuss architecture, and our cities and neighborhoods, in a sensible way, we must begin with a radical reassessment of our role in the world, our role in the work of building, and how we should regard it – the work itself, the results of this work, and our relation to it. As you will see, in the model I am putting forward, this radical re-assessment will turn out to be coupled with a re-assessment, also, of the greater world – in short, of the planet we live on, of the universe and of our relation to these greater structures.

What I propose, is a view in which the everyday process by which we make our world, or any part of it, may become considered as our most fundamental act of worship. Planting a bush can be such an act of worship; putting a new counter in the kitchen can be such an act of worship. Building a great bridge across an expanse of water can be an act of worship. By using the word “worship,” I do not mean something with a phony religiosity. I am talking about an utterly down-to-earth approach, rooted in common sense, and with an awareness of our own souls while it is being done. When this act of worship succeeds, something sublime, even if humble, can often arise from it.

At other times, something very grand may also come from it. A roof, and a flowering tree can have this quality, if felt sincerely, and given time. Improving the pedestrian green of a neighborhood can be seen as an act of worship; mending a fence, building a wall, shaping the roof of a building, placing ornament, if it is appropriate, is an act of worship; settling the position of a path through a meadow, something as simple as that, is also to be seen as an act of worship. And of course, the inclusion of greater, or deeper things – cases where a small statue, or an ornament, or a paving, or a small pool with a fountain, a touch of color, a habitat of animals and birds – all these too, as we are building them, will come to fruition well only when they, too, are built in the mode which I call an act of worship.

If you imagine a world in which six billion people, all on their own, and together, are refining, rebuilding, and glorifying the world, in its most elemental feeling: that worlds, created by hundreds of millions of acts per year, can have this quality.

That is what I imagine; and that is what I strive for. I hope to inspire you to share this vision, to help make it become real, and, ultimately, to join forces in helping to create it.

Chapter 1: The Whole Creates The Parts

To start with, I want to describe to you a vision of how the world works. It is rather simple. And it depends on a really quite simple basis. It says this: The world comes about as a result of unfolding. It unfolds continuously, in virtually every point and every part, and its configuration, changing constantly, comes from this continual unfolding. The harmony that we sometimes think of as the harmony of nature – is in fact the harmony caused by this unfolding. What comes next always comes from what is now. And it does so in a way that always protects and continues and completes the wholeness that was there before. That is what harmony is. And it is that which causes the harmony of streams, and daffodils, and nightclubs, and the making of a good dinner, a song around a fire, and the dying embers of the evening light.

I should say, that this is how the world works, when men have not polluted this unfolding. For thousands of years, human building, and making, was in harmony with the earth, and people did not destroy and undermine the

harmony of nature. One felt this harmony, even in towns and buildings, because it all came about by the same process.

But this is not inevitably so. It is also possible for human beings to ignore, or damage, the process of unfolding. That is what we have experienced during the last three quarters of a century. And, now, the idea of unfolding, as a way of making the environment, has even disappeared from people's thoughts, and from their awareness. So we have the "mystery" of why places are ugly, and damaged. It is not a mystery. It has come about simply because the process of unfolding has been disturbed and polluted.

Indeed, this picture of things where everything unfolds, is not just a nice way of talking. It is profound. As you explore it, if you explore it carefully, you will find that in the end it fundamentally alters your perception of the world, and your perception of what we are doing as we try to build the world.

* * *

But of course, this picture, even as I have described, depends on the idea of "the whole as the thing which unfolds." What I have described, in everyday language, cannot even be thought, without some articulate conception of the whole. If it is the whole which unfolds to create its parts, then we need at least a partially developed idea of what "the whole" means.

There is something in our intellectual history which has caused us not to think about the whole, and certainly not to think about the way a whole makes its parts. It is commonly said that we have to learn how to make a whole out of the parts, and this has been the way people have been thinking about the world, actually, roughly since the time of Dalton, about 1800 [1]. Of course, Democritus thought about atoms, much earlier, 2500 years ago [2]. But John Dalton was the person who really put atoms on the map, in the modern sense. And for about 150 years after Dalton, it was commonly thought that everything was made of atoms. Nowadays, of course, we know that this idea is too simple ... indeed, that it isn't true at all. The atoms are only temporary systems which are created by the whole, at different times and under special conditions. And these atoms are not fixed entities, but dynamic systems which are continually being torn apart, modified, and rebuilt. That, too, is achieved by the whole in which the atoms swim.

Jumping on a little, we may catch a glimmering, already, of the conclusion which will follow from this observation, namely, that the correct picture of the world is not that the whole is made of parts (called atoms or anything else), but that *all the parts are continually being made BY and WITHIN the whole*. This is not only true at the atomic and subatomic level. It is true at every scale. And it

also corresponds more closely to our common sense. The tree is not made of leaves or made of branches, it *makes* leaves, it *makes* branches. Even if you go to the molecular level, it is not true that the tree is *made of* molecules like chlorophyll. What is true, is that the tree is *making* chlorophyll molecules. The leaves are *making* chlorophyll molecules.

Every part of the tree, all the way down, in scale, is being made by the tree, or by systems within the tree. And of course it's not just a process which is going on at one level; so it isn't actually the tree, but it is the various organs and organelles that are undertaking this work. The same thing happens in the universe. First, for the first million years or so of the universe's history, there were no atoms at all; the universe was too hot. Then they started being made. And even now, atoms are being *made*, daily, in the sun and other stars. Yet, in common parlance, we still think of atoms as the basic building blocks of our everyday world. This really is not true. It is a colossal blunder to think that wholes are, in general, made of parts, when in fact, throughout the universe, and here on earth as well, the whole is always what gives birth to, generates, and creates its parts.

The ocean is not made of waves. The ocean creates its waves. The sun is not made of atoms, it creates its atoms.

Yet Dalton's insight about atoms – so important and valuable two hundred years ago, and now known to be inaccurate – introduced a parable into our culture, and into our minds. We began to think that everything in the world was made of parts, and that its nature always came from the way the parts were assembled. And at that moment, and from that moment on, there began to be a colossal blunder that, by now, has spread all over the planet, and has infected almost all of us with this mistake.

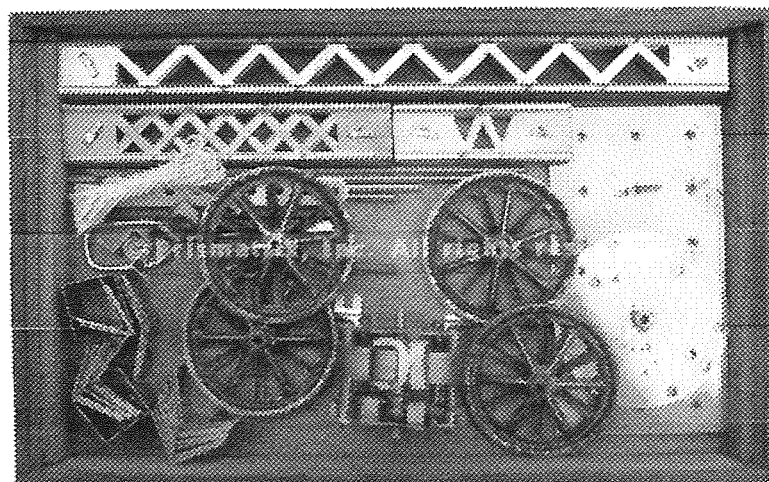
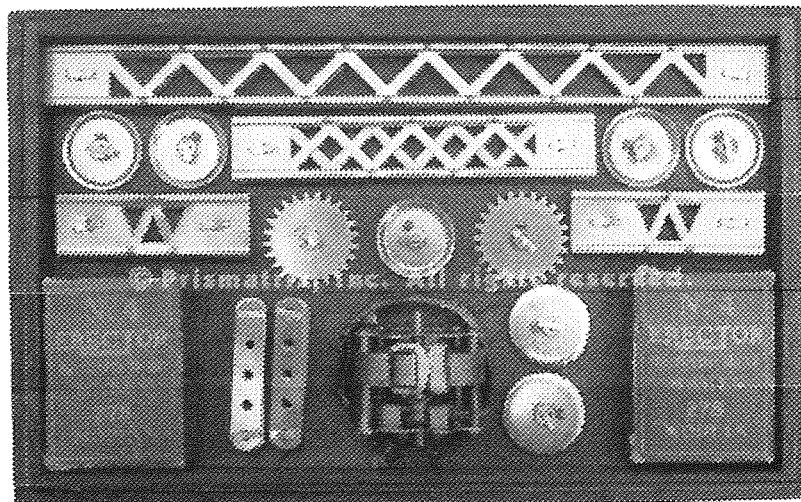
Chapter 2: The Mistaken Notion that the Whole is made From Parts

In a sense our obsessive preoccupation with atoms, may be said to have become linked with certain children's toys. You are all familiar with Erector sets and Lego sets. In effect, these types of children's toys, which began to be sold about 1915, embodied the understanding of the world that was created around the time of Dalton and in the subsequent 150 years. The essence of an erector set, is that a kit of freewheeling but fixed parts can be combined and assembled in many configurations.

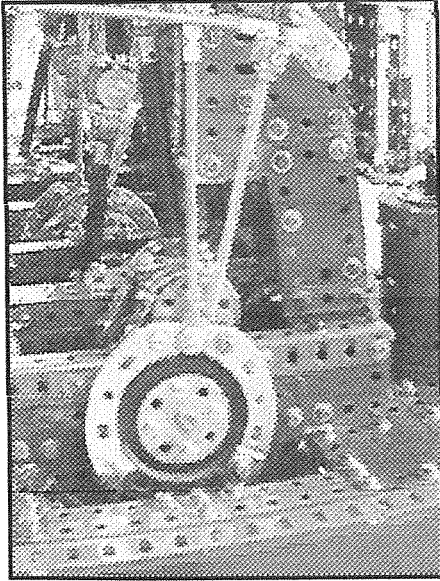
The idea of rich possibilities of combination was deeply exciting. It became the basis of modern chemistry. It has been the basis of computer programming. It has become the basis of modern engineering and construction.

Faced with this powerful and exciting mental tool, people can be forgiven certainly, for failing to notice that it is **wrong**. It is factually wrong, and does not correspond to the way the universe is made.

Small wonder, then, that the buildings, neighborhoods and towns, made by this process, do not work very well: and do not fit into the overall harmony of nature on the earth's surface.



One of the earliest American erector sets. The Gilbert number 4 set, 1916.



Left: An engine made from a Meccano set



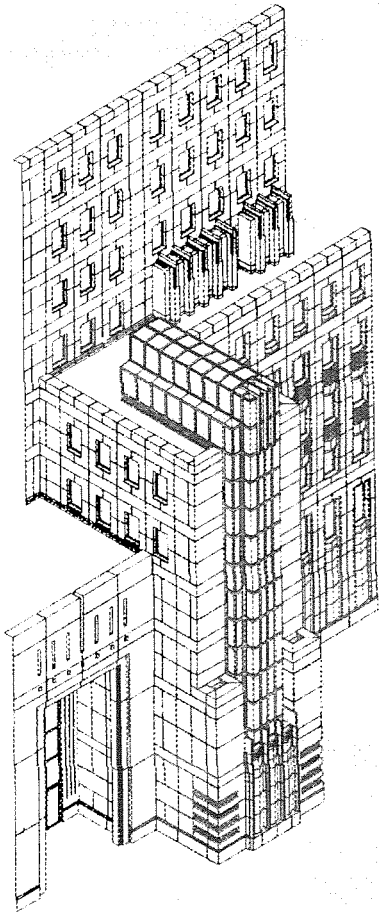
Right: Buildings and people made from a Lego set

But these toys did not remain mere toys. They gradually changed our understanding of the universe, and we began to think of the universe itself as if it was a giant erector set, with free floating parts, which could be assembled and reassembled to create wonderful things – trees and waterfalls, even ourselves.

Worse still, and this was a shocking step, was the pervasive impact of this kind of thinking on the world of architecture. -- if I may make so bold, these toys and these Lego sets, even if we take them literally -- are not at all unlike what we architects and planners and developers and builders – have been doing for the last fifty years, and are now producing and putting into the world at large scale every single day.

Suddenly, in the space of two generations, the world became a collection of isolated fragments, where before it had always been a cohesive, unfolded and unfolding whole. This shocking reversal, to an infantile form of shape and production, came upon us almost without anybody noticing – yet it has transformed the world, and we are only now beginning to appreciate the huge damage done to the world by this transformation in thought.

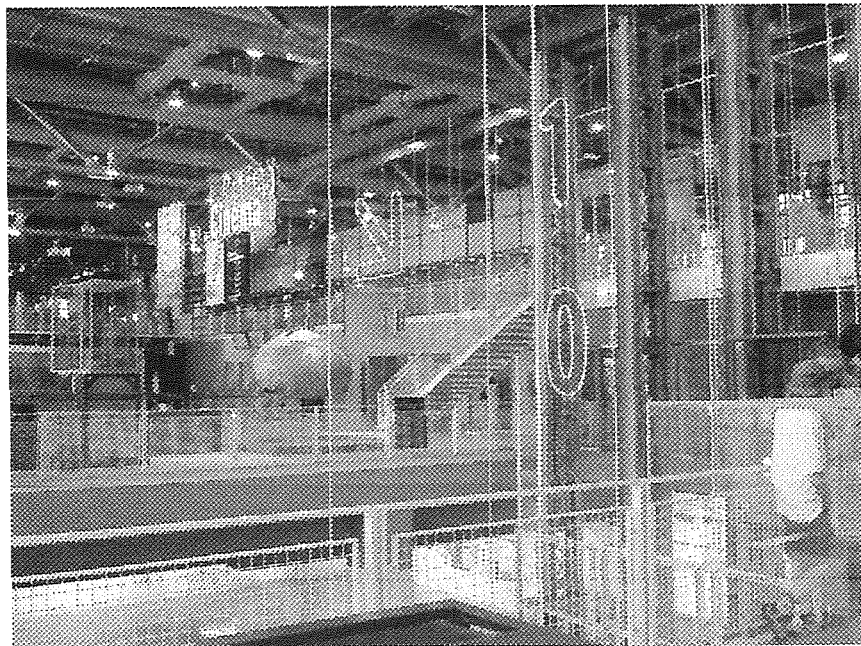
Here are some typical parts of the world, created by our best thinkers and engineers, operating in this mental state, during the 20th century.



Left: Construction of the MI6 building, London



Right: Housing in Soweto

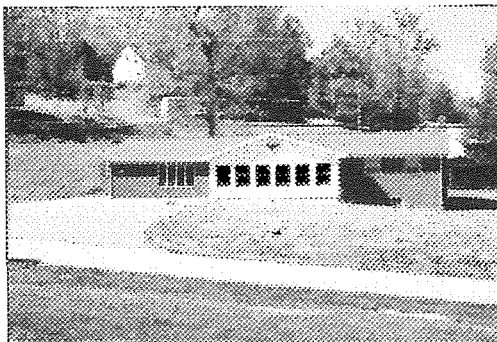


The Pompidou Center, Paris, c. 1990 1980.

These harsh and horrible places are very plainly consequences of the assembly mentality. They show houses, housing, and public buildings that are indeed made within the framework of “assembly”, made of preformed components, conceived and executed as a composite made up of preformed parts. The whole has no way of influencing these parts, and the harmony of the whole is nowhere to be found. Most important, the unfolded world, and the emergence of this unfolded world from the universe, does not exist here. The type of conception, design, planning, and construction, is one conceived by human beings within the framework of an assembly mentality. It is unable to help the world become more whole, because the approach, making unfolding impossible, does not permit it.

Chapter 3 Assembly From Parts As The Failed 20th Century Ideal

Of course, critique of such buildings has now been going on for one or two decades. Many people are beginning to feel that they have surmounted this difficulty of these buildings by making buildings and neighborhoods which more resemble the past, which have better scale, better public space, and mixed-use development, and more humane discussion with people in neighborhoods. And, indeed, these improvements have made some small, positive difference. But the deeper difficulty remains almost unchanged. For the most part, because of the means of production commonly at our disposal at the end of the 20th and beginning of the 21st centuries, the buildings are not deeply adapted in the large or in detail, they are not made as unfoldings from the whole. The mechanized quality typical of assembly thinking has not gone away. It has only been pushed underground, or papered over with half-intellectual or romantic cosmetics.



Left: Tract house, North Carolina, USA Right: Developers housing near Pulborough, West Sussex, UK



Mass housing in Naples

This is harder to see, and this difficulty is not so easily available to our minds. We need to use our feelings and our intuition, very carefully, even to see the trouble. I shall now consider two examples of this latter type, carefully, and in some detail, so as to expose the problem that remains in them.

But this difficulty is not only present in the most harsh examples like the Naples housing. Oddly – and this is more difficult to understand, but a more important insight – the same quality is also present in many thousands of contemporary works of architects and planners and developers who are trying hard to be humane, enlightened, and to create a more harmonious and better environment in which people may live. They look more humane, but they are equally damaged, and equally damaging.

At first, we may see these pictures, and experience some gratitude that the builders and developers have done their best to avoid the crass mass housing of an earlier era. But these places are not really adapted, or unfolded from the place where it is built. Indeed, what we see in this photograph is an assembly of preformed elements, made to “look like” a naturally unfolded thing. But it is not one. They are commercial assemblies, in no way concerned with the love of the land, or with what might unfold, naturally, from the land and people. It would not be easy to be comfortable in these places: not, at least, deeply comfortable in your heart.

For example compare the gable ends of the two left hand buildings and the right hand building. The right hand one has a small hip. But why. This has not arisen from necessity, or unfolding. It has arisen because someone wanted

to introduce more variety, and to do so, play combinations with a bunch of preformed elements – the ridge end and the hipped end.

Chapter 4

Environments Created Only By Unfolding

They have emerged from the whole, and are fully adapted to the whole, because they have unfolded from the whole

For contrast, please look at these examples which show places, not far from the town of Pulborough, that are genuinely unfolded from the whole.

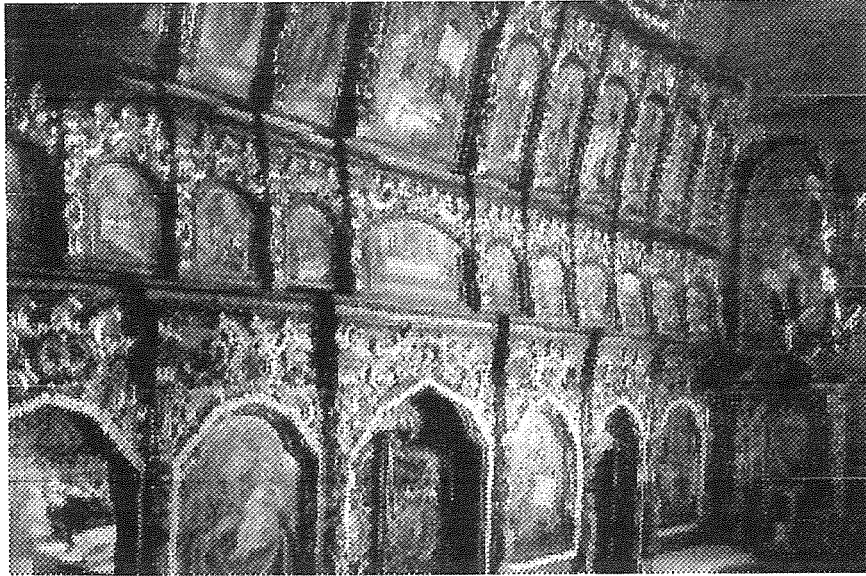


A place that has genuinely unfolded from the whole

The fact that the earlier pictures show places that are loosely based on a love of the old, or of the antique, does not bring them to life in the fashion these latter pictures do. These get their comfort and their life, not from their age, or their style, but because every part has been shaped, and modified, within the

whole. It is that quality which brings harmony into these things, and that quality which makes them genuinely fit for human beings.





A church in the Ukraine

Chapter 5: What Then Is Unfolding?

So far, in this essay, I have used the word “unfolding” in a fairly loose way, almost as a metaphor or as a very informal description to draw attention to a certain kind of complex phenomenon variously described as structure-preserving transformations, or wholeness-extending transformations. Structure-preserving transformations are discussed, and rather fully described with many examples, in Alexander [3]; Wholeness-extending transformations, an alternative interpretation of the same phenomenon, are described in Alexander [8]. But since the concept of unfolding is so fundamental, and so important in everything that follows, I shall now spend a few pages defining its meaning more exactly.

Let us start with two examples.

Example 1. Imagine a leaf bud that grows and opens to become a leaf. This leaf is on a particular tree, say, in a particular meadow. The process of the growth and opening of the leaf, is what I call an unfolding. There are two aspects of this unfolding process which are critical, and allow me to call it an “unfolding.”

1. As the leaf grows, it leaves the whole (meadow) intact. The wholeness of the meadow is not disturbed.
2. In fact, if we think carefully, we see that the growth of the life is not only benign, not destructive to the wholeness. More than that, it helps and enhances the wholeness of the meadow.

Example 2. Imagine a mountain range that is moving and rising, as a result of the sliding of the Earth's continents.

1. As the mountain grows, although it moves everything over a huge area – possibly hundreds of miles long and wide: yet it does it in such a way, remarkably, that very little else is disturbed. The trees and rivers and slopes are all more or less after the movement, as they were before.
2. And, once again, even if conditions are changed, in considerable degree the creation of the mountain, too, is benign. The landscape, the variation of habitats, the impact on climate, the introduction of new species, that follows this event, is rich, and enriches the Earth.
3. The glacier forming and sliding down the mountain valley, melting and grinding rocks underneath, that too is an unfolding.

In these natural cases, and indeed in virtually all natural phenomena, even in violent natural phenomena, the unfolding is always characterized by its gradual nature, by the fact that it leaves the global structure of the whole from which it unfolds intact in its essential structure.

The gradual way this unfolding happens in all natural events, is described in [3, chapter 1]. The way that unfolding happens, and is able to happen, is described in [3, chapter 3]. And the way that unfolding has become virtually unfeasible, for man made decisions in the urban environment of the last hundred years, is described in [3, chapter 4].

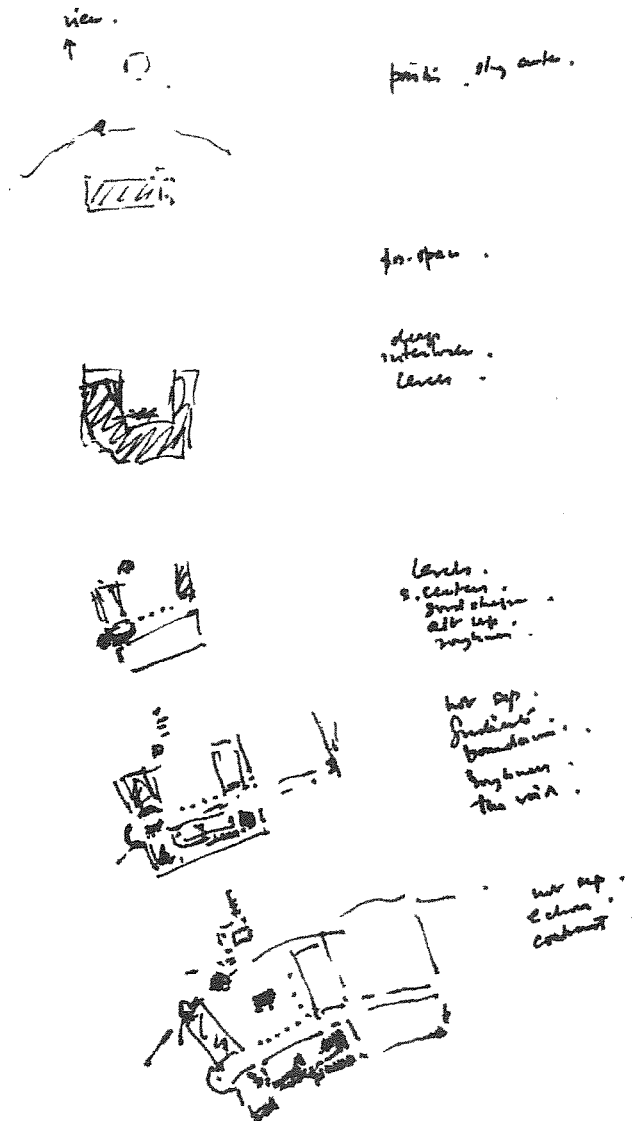
In mathematics, a continuous function is a function for which small changes in the input result in small changes in the output. Wachsmuth 2005 [4]. As an example, consider the function $h(t)$ which describes the height of a growing flower at time t . This function is continuous. In fact, there is a dictum of classical physics which states that in nature everything is continuous. By contrast, if $M(t)$ denotes the amount of money in a bank account at time t , then the function jumps whenever money is deposited or withdrawn, so the function $M(t)$ is discontinuous. xxxxx 2006 [5] .

The first rule is that an unfolding always begins with some feature of the existing state of a place, or volume of space. This feature may be a point, defined by the configuration, or a contour defined by the configuration, or an area marked by a homogenous coloring or density, within the existing configuration In more complex cases, it may be a volume of space, defined or bounded by solid material, it may be a morphological feature of a configuration, such as a singularity in a curve; or it may be a distant view which is exceptionally lovely and identifies a spot from which this view is best seen. It may be a line marked by features and representing a slight

discontinuity; it may be a shading of color in a certain area, which marks that area as distinct. It may also be a rhythm of dots, or buildings, or trees, spaced at roughly even intervals, and therefore creating a virtual line which is connected by the dots.

Any one of these elementary configurations can pave the way for an unfolding – that is, for a transformation of the configuration which starts from the identified feature within the whole, and somehow then extends that feature, intensifies it, perhaps makes it more robust, or more differentiated.

Below I show a sequence of unfoldings, that show the progressive differentiations that placed a house we built in a site of an old Sonoma county vineyard in California.



Here is a photograph of the finished Sonoma house, showing modest, but typical unfolding. It is quiet, unpretentious, yet also, like a particular leaf on a particular tree, modestly different from all other places in the universe, because it came only from THAT place:



The Sanders house – the long hulk of the house and roof in the landscape

Bifurcation...

Catastrophic event

These unfoldings represent morphologically continuous transformations. Each follows from the previous one, always protecting the whole, and protecting what was good in the previous configuration. Each one is based on subtle, soft, respect.

On the other hand, the kind of developments we have become used to in building, planning, and commercial construction of the last fifty years, represent a series of jumps and lurches, each one arising only from some arbitrary thought – no one of them having its roots in respect for the previous step, nor respect for the overall configuration of land, topography, and buildings that was there before. No wonder, then, that these typical developments, that are not based on unfolding, have a violent and destructive effect on the harmony of the Earth.

Chapter 6: Adaptation

Chapter 7: Numerical Aspects of Adaptation and Unfolding

If we choose to go in the direction I have sketched – and, for myself, I see no alternative that will give us, as a people, and as a profession, both dignity and spirit -- we are then facing the need for a very substantial change in our attitude and in our practices.

The picture that I have painted -- the idea of a world that unfolds continuously, always adapting to the world that existed just before, and always governed by and emanating from the whole – has built into it, a key numerical requirement. When you understand this numerical requirement, you will see that it is decisive, shocking at first, but then, once you take it in, necessary. It changes everything!

Consider a single acre of land. As you will see later, the effective unfolding of a place that is one acre in extent, with open land, vegetation, buildings, possible many buildings on it – requires, over time, a huge number of adaptations at many scales and levels, in order for each part to have unfolded, well from its context created by other earlier unfoldings. All in all, the number of unfoldings that are needed, for this small place to be harmonious and successful, is, during a fifty-year period, something like on the order of a thousand billion (10^{12}) separate acts of unfolding and adaptation.

Let us see where this number comes from. In order for adaptation to be successful, I think it is reasonable to say that every cubic centimeter, needs to be shaped, moulded, to fit the larger whole in which it sits. Of course this takes time, that is why I have estimated 50 years as a reasonable time period. Now the one acre parcel – let us consider that the average height of the structures in this one acre, is about 1 story across the board – that allows for some open land, cultivation, and some two- and three-story buildings. All in all then, we are dealing with a volume which is 6000 cm by 6000 cm by 300 cm high – a total of 108×10^8 or about 10^{10} cubic centimeters. Suppose, that each day, one might undertake unfolding of 1000 of these one-centimeter cubes. This process would take, then, $50 \times 365 \times 1000$

It would need a process, then, in which each day, we would have to accomplish $10^{10}/50*365$ or about 1000000 per day. A huge number.

Lets modify the calculation. Let's say that the size of the adaptations is more like a cubic foot. In that case we would have $200*200*10 = 400,000$ cubes, and unfoldings. Over a fifty year period, this would need roughly 20 adaptations or unfoldings per day.

So, to have any hope of keeping the one acre in a good state, we need continuous attention to the land and buildings, inside and out, at the level of 20 unfoldings per day, going on continuously, for all time.

At present, we do not yet have any existing form of human organization or human administration which can achieve a process that contains, or controls, such a such a number of linked and coordinated processes. It means that the vast – truly vast number of adaptations, and the continuous operating nature of these adaptations, governed by human intelligence – presents us with a human, social, and administrative problem of unprecedented order. We recognize our era as one which deals, comfortably with large numbers. The population is bigger than before, the number of technical transactions has increased and continues to increase. But in the area of adaptation, we are woefully behind.

Simply stated, the number of human events, and human decisions, which is required to make an environment that is in balance, and well adapted to its inhabitants and to itself – **is huge**. In our present, supposedly highly developed technology of construction and contract writing, the actual number of human events and human decisions regarding fit, and feeling, is minuscule – leading, of course, to highly mechanized buildings.

I have sketched these issues out in numerical terms, so that we may then, in part two, begin to construct a way in which human beings should, and can, make the world, so that adaptation, and unfolding are realizable possibilities, capable of becomes the norms of society.

Chapter 8: The Physical Character Caused by Unfolding

Before we consider that, we must supplement the rather shocking numerical aspect of the unfolding process, with the geometric aspect: that requires, simply, that each step of unfolding taken is genuinely driven by, and is genuinely under the influence of, the whole.

This high-sounding language, contains a practical issue that lies at the core of this essay. But what, in practice, does it mean? The crux of the idea is, simply, that what is done during the unfolding of X, is to be made congruent with, or harmonious with, the larger whole in which X exists. In order to do that, we need a way of understanding just what that “whole” consists of, how may we perceive it (with reasonably accuracy, and with reasonable agreement), how may we read it, and if necessary, how may we communicate this wholeness to others, so that we are able to work in concert on the particular unfolding, now in hand, which is to be influenced by and driven by this wholeness?

In another place, I have defined, in precise language, just what this means.¹ Stated in slightly more informal language, it means that the structure of larger and smaller centers, surrounding the task, or project where the unfolding is to occur, must be visible, and understood, and that the unfolding of the small thing at the core of the effort, is done in such a way that it makes a maximum effort to help, support, elaborate, and sustain this structure.

What is not evident, though, from this language, is that the buildings and spaces, that will inevitably follow from this regime, must have, will inevitably have a particular geometrical character, that one might best describe as highly simple, highly detailed, simple shapes, arranged in loose gatherings, creating positive space between them, and hierarchies of well ordered centers, with appropriate openings, windows, roofs, and ornaments.

This is not a regime of classical architecture, or a regime of any special kind of traditionalism – it is a kind of architecture taken from a much larger – and unpredictable range of possibilities – but eschewing, altogether, the cynical and intentionally disturbing architecture of the past sixty years, c. 1960-2005.

If carried out correctly, it is likely to be an architecture that is free, too, of the ugly commercial touches, that are intended to sell buildings; and free

from the stultifying banal shapes crowded into over unusable outdoor space, and careless spacing.

As I repeat, these features of the buildings that are likely to follow from the rule of unfolding, when properly carried out, will permit beauty, charm, and elegance to flower, alongside simple and unpretentious buildings. A genuine renaissance of the art of architecture.

Chapter 9: In More Detail, What Does An Architecture Of Unfolding Look Like

Of course, people are intuitively, all too aware of this problem. And, the problem extends, also, to the well-meaning efforts of such reforming groups as the Congress for New Urbanism, which has tried to solve the problem by putting back traditional building forms, in the form of codes. One of the things that people are worried about -- I'm talking, here, about the public discussion of New Urbanism -- that at present, the stage that it's got to, it still hasn't succeeded in putting soul back into buildings. That is to say, it is accepted, I think, that many important problems -- mixed use, greater emphasis on pedestrian, better scale in buildings and so forth -- it is accepted that many of those things have been improved, and that's a tremendous achievement given the fact that CNU is really quite a young organization.

But, there is this odd sense -- and I know many of you who are members of CNU share this misgiving because I've heard you talk about it -- that still, there's something not really living about the products of the enterprise, even when you put all your best intentions to work, and your best thoughts, it is all too easy for it still to come out stiff, not nourishing in the deeper sense that we all aspire to.

The issue I have opened up -- the knowledge that in a harmonious world, everything is made by unfolding, in which the whole creates its parts -- NOT by assembly of preformed parts -- follows directly from these preliminary observations.

[, about the whole forming the parts is directly connected to this problem. To explain how, I am going to show you three or four pictures of a housing development in England. I have no idea if it is directly created by somebody who is an adherent of CNU, but it's a similar type of thing. And then I am

going to show you some other buildings, which are quite close by, which are genuinely traditional. Because this rather abstract topic that I have raised about the whole and the parts, it may help to kind of get it down to earth, if I say it's a question of what is really going on in traditional architecture. I know that all of you are inspired by traditional architecture, as I have also been, and the question is "well, what is the essence of traditional architecture that you are trying to reproduce?" Now, let me just show you these pictures...

Now, these are recently built, are intended to represent traditional building. They are, what shall I say, they're done with a certain amount of care and perhaps one could forgive them for being a bit too cute. But this is not a whole that has unfolded to produce the structure that you see there. Now, if you compare those pictures that I just showed with this picture for example which is not very far away... this place is literally less than 100 yards from the places where those recently built houses are. This is in India, in a traditional town... this is the Nolli plan, which I'm sure you all know, of Rome. These structures are completely different from the assembled, rigid structures that were visible in that first group of pictures. And if you say to yourself "well, why are the buildings that I am making not coming out the way I want them to?" That is, with all the effort, and care, and attention that you are putting into your work... The reason is, that you are operating within a regime, which we have inherited from 20th century architecture. Really, this approach to architecture, doing everything with drawings and the way that it is done... handing over to a general contractor and so on and so forth... and the whole machinery that we have, presupposes that one could actually make an adequate set of drawings of a living creature that is a building; and that if somebody then mechanically assembles that, which is, of course, what the contractor is legally bound to do, it will come out alright. I think the mistake that has been made by CNU specifically, is in not yet realizing that the thing that they were inspired by in the first place: traditional buildings -- Leon Krier has played a big, big role in drawing attention to that, and in doing his best to reproduce it.

But the real thing that creates the beautiful, inspiring, and admirable structure of a traditional settlement, is created by minute-by-minute modification, unfolding of details, room shapes, all of these things are being done hour-by-hour during the construction process as well, of course, as they are in the pre-construction process where you first site the building and where you work out what plan a group of buildings is to have. It is utterly different to attempt to freeze the future into a sixty-sheet set of drawings, compared with the idea of actually seeing that thing unfold, in which case you have the ability, constantly, to modify what is going on on the site -- whether it be a large site or a small site -- and bring it to life.

Now, in Hank's very, very kind list of my background, he forgot to mention one item that may absolutely be essential for you to believe what I'm telling you here. I am a licensed contractor. And either build directly... when I was a

bit younger I used to do a great deal of carpentry and concrete work, I was a lead man on a guniting crew... and in any case, we do build many of our projects and those that we don't actually build, we manage the construction and the craftspeople directly. That is, so that we are responsible for every sub, every subcontract and so forth. And we write contracts which permit constant, ongoing modification to take place, without raising the cost through change orders. Those contracts you can find on the livingneighborhoods.org website. But obviously you need a variety of instruments of this sort, even to contemplate this kind of thing.

Now, you look at that plan of Rome, what you're looking at is the trace of actions made by people over time. Each bend in a pathway, or house that juts out slightly, or all of these different things, have all happened because of real human events. And so the human trace of Rome is present now in the streets and buildings that still roughly adhere to that Nolli plan which was drawn a couple of hundred years ago or a little bit more. Of course Rome, like other cities, is also inundated by new construction, which doesn't know how to do this anymore. But it's very important to see that it is a structurally quite different thing. So, what I'm getting at here is, if you do adhere to the charter and the practice of trying to achieve, in the environment, what traditional builders managed, so magnificently, to do, the first thing you have to do is get your eye on the right ball. The ball involved is not the geometry, it's not "the roof like this", or "the window like that", or the overall shape of the building. I mean, these things do play a role but, the real ball is whether the stuff can come from a sequence of unfoldings of the land or the urban site or whatever it happens to be.

Let me show you, just to make clear what... I want to show you... This is one of the simplest of all cases of unfolding. These are, of course, rice growing terraces in China. There are very, very few rules, except to essentially follow the contours and to build a slight upstand so that when these things are flooded, they hold the water. It's very, very beautiful, it's very simple indeed, people have been doing it for thousands of years. And this is the kind of thing, a structure that is generated, which again, it would be ludicrous to try and make a drawing of this and then follow the drawing. It's a whole lot better to follow the land.

Now, let me just look at a couple of examples. I want you to try to go with me as to what precisely is it that happens at an unfolding. And it refers to the question about whether what you've just done is synchronous and harmonious and has emerged truly from the whole that was there before. Now, the Golden Gate, as you probably know but may not, the Golden Gate does not refer to the bridge, nowadays we think that it does and because it's painted red oxide, it sort of increases the feeling that that's the Golden Gate. Actually, the golden gate was the gap in the hills that happened to pretty much point due west. So the people in the bay area would see the sun set

everyday through that gap, and that's why it was called the golden gate. And it still bore that name after they decided to put a bridge there. Now, the beauty of the bridge is a very rare example where it actually... I'd almost say it improves nature, because nature is there, it has this very lovely configuration and the builders of this bridge did it so that the bridge perfectly arises out of that whole, enhances the whole, does no harm to it, and strengthens its beauty of feeling and its presence. Now something which I probably don't have time to do in this lecture but... taking steps, small ones, I mean, of course the golden gate is a huge step and years of planning and thinking and so on ... and I just give this to you as an example because I want you to understand what I mean by the relationship of one thing to a larger whole that it came from and that generated it. In a construction process, or in a design process or in a planning process, you can act in such a way that each step you take is what the whole tells you to do; it isn't what you wish to do, I mean although it might feel like that sometimes, but you are looking to see what the whole is giving birth to. And, this can happen in a very, very small way.

Suppose for example I've got a house and we're in the process of placing a couple of steps up to the front door, the type of thing I'm sure you've all done and experienced many times. I've deliberately chosen a tiny example, because if you take a few concrete blocks or bricks or planks or whatever, you can easily make mockups so that you can decide "okay, what is the depth of the tread and how wide is it, and how does the lower step have its termination; is it rounded is it square and so forth... how much space is on the top of the uppermost riser?" You all know that as you do that, you can make it ugly, you can make it nondescript, and if you try hard you can make it begin to be beautiful. That is, you will begin to feel something from that step that is good enough to stay with you. And if you work harder at that, you can finally find a sufficient refinement of the way those steps lay there... of course I should've mentioned at the outset what are they made of and so on... and you can then succeed in getting something which is a permanent joy in that house, and has truly arisen from the whole where it came from.

Now, there is not much there in what I've just said beyond A. common sense and B. a welcoming heart. I mean you, have to have a welcoming heart to be able to see this happen before your eyes as you play around and make experiments, and make something a bit wider or a bit longer or a bit higher and so forth and if you're not actually looking carefully you won't notice that one of, let's say two options that you're considering, makes you more whole in yourself just to look at it and just to be with it. And it might sound a rather arduous procedure to do that constantly, all the time, hundreds of times a month; actually it's not. Number one, it does produce the goods... that is, that it really does deliver. This is not a lot of bullshit. It isn't a claim, a sort of empty claim or a philosophical point. It is simply that if you follow that kind of process, then, with any luck, those two steps in front of that house will

forever be helping that whole that now exists there and has been slightly transformed from the one that was there before.

Now, in a neighborhood, let's say a neighborhood of 100 houses, you could have unfoldings of this type going on at many, many scales including the location of parking, and the way that pedestrians move, and where gardens are and where terrace walls are, and what the volume of the buildings is like, so there are many, many things that are unfolding. Over, let's say to build a one hundred house neighborhood, two and a half years or something like that, from the day when you first went there to the days when it is finally occupied, you could do that if the circumstances are set up to make it possible.

Of course this was commonplace in other periods, I mean, there's a farmhouse, there's a gate in an ordinary fence, which is done like that, this is the interior of a church in the Ukraine. All of this was being invested with these kinds of feelings based on unfolding, and unfolding of the whole was at work constantly, and was guiding the people who made these things.

Chapter 10: How Does This Kind Of Unfolding Come About In Practice

Now, it isn't just a question of the human process. For example this sequence shows I think, what is it? -- three days, four days in the development of a mouse embryo, and in particular for one of its feet. This, of course, is just a picture of a normal biological process, but if you look at what's going on here, you see that here on the whatever that is... the 11th day, you've already got some kind of trace, but basically the cell mass is undifferentiated to all intents and purposes. Here you begin to get dark material, which will ultimately turn into bone and blood vessels. Here, you are beginning to see the separation... you see this fork in the road here, which will turn into these two parts of the limb... I can't remember what they're called... the ulna is one of them I know. And then another day later you've got a fully differentiated mouse foot.

I am not speaking about these things, in regard to architecture, as some kind of science-fiction fantasy. I am not trying to imagine a 23rd century in which buildings are made by biological processes. I'm personally uninterested in those kind of fantasies. Some people dream about them, I don't. I'm a practical man and I essentially, don't build buildings if our group is not able to do this kind of process. I make it my business to set up contracts, procedures, budgets and so forth and time, so that every phase of the work includes the people that are going to be part of the neighborhood or part of

the building operation, includes the subcontractors and craftsmen. And as managers, we oversee the process of guiding these sometimes sensitive points where an unfolding has to be decided upon, and it could go this way and it could go that way, and you have to look at it a bit hard and then just make an on-the-spot decision. It is... I think those of you that have done work like that, which I know there are many, will testify to the fact the buildings come out altogether better. The question is what to do with the machine that is rolling over us? Because the machine of development, in its present form, it's not just what the developer does, it's what the city does, what the financial institutions do, what the planning authority does, and they make it extremely hard to take this approach which I'll talk about in a moment.

I think before I start discussing the kinds of changes which have actually got to be made to permit this type of work to go on at a large scale and in large projects, I need to just show you a few examples of cases where actual unfolding might be happening. I'll do this a little bit fast because I want to go back and... oh I know what I... I think I'm going to show you this; this is a fascinating example, some of you may have seen it running on our website, I'll just show you this quickly first: this has to do with the 1000 year history of St. Mark's square. Well, you all know what it looks like, don't need to show you that really. It's a lively place and there's a lot of people there and a lot of wonderful stuff going on. So that is the plan of St. Mark's square as it was in 560 A.D. Now you see the little pink and blue things over on the left, as I mouseover those, stuff happens on the plan. The first thing that happens is that some latent centers are identified so that those pink blobs on the left of the area are simply identified as being latent centers -- that is latent potential wholes -- but are not really articulated yet because they're just sort of hinted at by this church, which is sitting there and causing that phenomenon. So, anyway, having identified those pink things, you then say "well, okay, then to give them more life and more substance, we'd need to have a building roughly in the area of where that blue thing is," and that indeed is then done. Here you are, 140 years later, and that building is there and other stuff starts to happen. So now, you've got another pink area, which it describes a latent center over in the area where the campanile actually got built later. Again, you look at what are the latent centers that exist between that pink thing and that church that's over on the right. So you say, "alright, we're going to put two more buildings there". That's what was done in the period after 700 A.D. Then we've got that one that's now in there, and now we've got another couple of latent centers. In this case... see this... no you can't see if I do that... this thing and this thing they're just virtual centers that exist in space, which people were experiencing on the ground, and the reason that there were two of them rather than one is because the natural configuration caused by this and by the corner of that... this center here is tied more closely to those three buildings, and this center is sort of down by the water and given it's position by that. And then when you say "okay, so now to make these two latent centers become actual, we need to build something where that blue dot is".

And I'm obviously skipping a lot of what these folks were deliberating about while this was all going on... .. so then that thing got built and then we go to the next step. Now, I'm not going to lead you through every step, it would take too long... it would be a bit boring. But I will just do the mouseovers fast so you can kind of see how it goes. Each time, what one's doing is identifying a latent center as a pink thing. For instance, there was something, there was the water somehow begging for some extension; the idea was to put something there. Then indeed, there was a platform built so that St. Mark's extended out beyond, what was then, the doge's palace, which was rebuilt later. So it goes on and on like that. Very gradually, just from the intense examination of where the latent centers are, and therefore how the whole needs to unfold, you gradually get the build-up of the whole of St. Mark's square as we know it. This was in the 16th century, and it's not been changed a lot since then. It's interesting because that is a very, very simple regime, a very small number of steps of unfolding that are just being repeated again and again and again and again to incredible effect. Let me just look at a few...

Chapter 10: An Architecture Of Unfolding In the 21st Century

This is an example of the Eishin campus, which I'll show you in a minute. This was at the very beginning of the project, when we had been commissioned to build this thing in Japan and I had spent time looking at the light out there in Saitama prefecture... it's a very unusual soft light. In our yard we built a variety of, these of course are full scale mock ups. But they're just about eight feet high and six feet wide, something like that, I can't remember -- showing the potential use of gray concrete, black plaster, white plaster and wood. And then having made that... that came directly from the wholeness of the land, and one could see that, and then that simple series of mock-ups that I just showed you then gave birth to the color and materials on many buildings on that campus, which roughly followed the scheme that was established by that one step.

This is the living room in a house in Berkeley. This is the fireplace which is just next to that huge bay window. For instance, this fireplace was, originally, in the plan that we thought was appropriate, the fireplace was at the back of the room, that is if the bow window is like this and the fireplace was back here, of course like everyone else we have to submit plans to building departments and usually because they know that we do good work, they are not too bothered when we start changing things around. Very rarely called upon to change drawings even when we make major changes in the structure... in this case, it had become clear by the time the ground was just

roughly terraced out, and one could visualize that window there just with the mind's eye, it was obvious that the fireplace needed to be in the side of the room so that sitting to the fireplace was also going to let you sit towards that bay window rather than being at the back end of bus. It happens that this is a very heavy fireplace that was contemplated, it's a cast concrete structure, the land is quite steep and so, I saw this happening and we had to... the reason this elaborate stuff with all this plywood here is that the ground was falling away, we didn't have a slab at that point and so to even figure out where it was exactly, we needed to just build this bit of junk here. Then later in the history of this thing, the room now was approximately framed. These were the concrete columns that were to be cast, moveable forms so that we could space them in such a way as to get the optimum spacing for the bays, and we now had the fireplace in position in a cardboard form. And in the same room, we made plaster panels, which we cast in our own workshops, both for the walls and for the ceiling and so here you are back in the first picture I showed and you see that all of this plaster work is up there in the ceiling and --- you can't see the texture very well in this photograph ---there're actually textured surfaces in-between here as well. They're very very delicate, they're less than a sixteenth of an inch deep, because we made several versions. If it was more than just a trace, it started to be really obtrusive and not calm.

Here's another example of a building built in West Sussex, a visitors center. So we got the slab in, and then we started to look more carefully at the windows and the walls. The back half of the room there had been planned to make a narrow bit, but once one was standing there, it was obvious that couldn't be done just as we had originally imagined it. We built platforms, just put some plywood down on and finally ended up putting that narrow gallery along the back of the room, which was a very pleasant place to sit, and quite a favorite with people who come in there now. So as that was happening, we're testing what it's like to sit up there, that's why the chair is up there on this rather rickety thing, is the height exactly the right height? Now, the windows at the front had to be modified because all of a sudden now, we've got tables and chairs looking out of a window, which had originally been, in whatever rough plans we had drawn, they were quite low to the ground and, in fact, then ... looks for picture... so these windows had to be raised on the basis of those kind of mock-ups and experiments with the blocks, and the chairs and so forth. It looks extremely simple, and it is. But, the reason that it moves you when you're there and in it's presence, is because of all this minute care that's been taken with the various parts of it. We made a special sort of thistle-shaped keystone ornament, which you can barely see up at the top of these. I think it might show up in a detail. And of course we had earlier, also very early on, long before the building was designed, we had started to make brick and concrete and flint panels, on the site itself where the building was later built, so we could judge how these things fit the light and atmosphere of the site. And when we were secure that we knew that -- oh there you can see that thistle thing -- we felt ready to go forward and it pays off. There are hundreds

and hundreds of decisions in the building, on-line decisions, and I'm not saying exclusively during construction, many similar things were being made in model form, and sketch form, when the building was first being planned, but the unfolding process is the same.

Anyway... I think that's probably enough of that, I won't show you anymore of those just now. How's the clock running? Fifteen more minutes... that's good, thank you.

So the question is, to learn to create a delivery process, that is an implementation process, which is able to do the kind of thing I've been describing here, on a large scale and in the normal, run of the mill construction. It's not that hard to do, you just have to have the will to do it. You might have to spend a little bit more on architect's fees and project management than a typical percentage paid in the development community would allow for. But, you have to remember, I didn't have any pictures of it, but the people who... oh yeah you saw some people doing... the people whose building that is, were completely engaged in all these decisions while it was going on, all the time. Whenever we made mock-ups they used to come in and we'd have a talk about it and so forth. In larger projects we do the same thing with families or communities. But, the important thing is to get it clear that you cannot make a beautiful thing if you do not do this. And when I say beautiful, I'm not talking about some architect's private notion of beauty or of some sort of aesthetic criterion or anything like that. I'm talking about whether the buildings you make do nourish the soul. So, people who are in those buildings and who own them, or live in them or work in them or whatever it is, actually feel that they belong there. They feel that this is part of them. It would be very easy to say "well, development is development and we can't afford to screw around like that, we've got to make some money and we've got to use the procedures that we know they work." I understand that sentiment, but I very definitely do not agree with it. And let me tell you why. You could say that among all the professions, at least in the industrialized nations, the developer is doing the most important work that is being done in that society. The reason I say that is, they are actually creating our world, the world for millions, hundreds of millions of people. Somewhere along the way, the notion came up that it was a developer's right to make large profits from doing this task. Now actually, the business of profit has nothing really to do with the skill and dedication that is needed to do the kind of things that I have been describing to you. So I would say that on moral grounds alone, and on practical grounds, because after all, there is a huge public out there who are growing increasingly impatient with the deadness that so often exists in the newly built world, and as I say my not entirely humble opinion is, that shaping the things so that they resemble older forms is not what's going to do the trick. What is going to do the trick, is that every decision is made with love and care, in the right order, so that this harmony, which I'm attempting to communicate to you, actually comes about. And so I think that very

powerful argument can be made that developers, no matter what they may choose to do or not wish to do, need to take responsibility if they wish to continue doing the most important job in the nation. This is a very very funny idea, that the people who hold the future in their hands, are working in an atmosphere where financial reward, very huge financial reward in some cases, is what they get for doing it. How inappropriate, somehow, if care for the world and care for the land and care for the people who live in it, is actually the front of the agenda. Then we must rearrange the way that the development process works. I think that CNU, especially with its renewed emphasis on implementation, is in the ideal position to undertake this or attempt to undertake it or to share with those of us that are doing it from other directions to do it. Make no mistake, it's a massive task. I'm not underestimating it at all. But if it is true that the kind of process that I've been showing you is what it takes to make a habitable environment, then no matter how easily you may be led to say "it's impossible, we can't bother with that, we'll never work, we can't get it to happen, the city won't let it happen" etc., really those kind of brush-offs are not sufficient to deal with the gravity of the issue.

Actually, there are two or three things I'm going to say that I haven't got to yet... first before anything else, I'm just going to show you a few slides of the Eishin project quite a few years after it was built. I think you will be able to feel the human atmosphere that is in that place, because I want to bring it to your consciousness. First of all, it's a pretty large thing, it's not huge, but it's roughly nine city blocks and its about 300 meters by 300 meters and it contains a large number of buildings. But I just want you to look at the expressions on people's faces and so forth. Now this was at the very beginning when we were laying this thing out, there was large numbers of the community involved were out there placing flags in what were then tea bushes to indicate the buildings. This particular drawing is a take-off from the flags, and then that was drawn and became the basis for our submissions. The process of that sort that was having to do with walking about and saying "well, the line of this particular path should go a little bit further over that way and so forth"... were still going on at the time when heavy construction began. So here, as you can see, the site is in major upheaval just with heavy construction. And here we still are, with bamboo and strings, adjusting the precise alignment of one of the entrance paths, which was sort of a processional way into this campus.

I'll just run through these without comment really...

This was the central building where people were allowed to do pretty much anything, as you see...

I hope you will believe me when I say that you cannot get that kind of thing to happen without going through the sort of procedures that I've been

speaking about. If that's true, is that big enough to turn our heads around in terms of how we handle development?

Chapter 10: Beauty and Coherence

There is a vital aspect of the whole, which I want to mention.

Chapter 11: The Nature of God

There is a vital aspect of the whole, which I want to mention.

Let us go back to the comment that "the buildings that we're making at the moment (20th and early 21st century) don't have enough soul." If one tries to sort of put it in precise terms, you can say well there isn't spirit in it, and so forth. You can be a bit more practical and down to earth and simply say when something has unfolded from the whole, you feel connectedness there.

So the identity that you feel and the connectedness that you feel, come about when the place you're in has unfolded from the whole. People often ask themselves "why do I feel so good in nature and why do I feel so not so good in such and such group of buildings..." it's because when a thing has unfolded from the whole, it touches you in every part. That is what nature nearly always does.

Spinoza was of the opinion that the whole and God were virtually identical. "There is only one substance, and that is God." He was considered to be an atheist by religious folks of the 17th century, even though he went so deeply, and with such care, into the nature of God, and indeed made God the supreme Substance, the supreme Being, and, in modern parlance, what we may most easily call "the Whole." I certainly believe that too. There is only one whole, and when what you do can be brought out of that whole and unfolded in the way which I have so inadequately described in these last sixty minutes, it is as if by participating in this, you are being given a connection to the whole. That is what people yearn for and that is what they mean when they say "well such and such a development is okay, but it isn't doing that." And yet really, as architects or builders or developers, that is our job, that is our business and that is what we are entrusted with.

It is, in any case, fundamental. If we hope to maintain a living planet, where we can be alive, and feel alive, feel connected to the whole, and feel connected to the spirit, the world we build **MUST** be planned, built, and created by unfolding. There is **NO** alternative.

What this means, then, is that we cannot achieve wholeness, without paying attention to God. Do not misunderstand this as a religious statement. Recall, that I do not mean, by this, any one of the many images of God as a person, powerful, just, all seeing, sometimes willful, that have appeared in different forms in different religions. I am referring, here, to the idea of God, seen as, and felt as, the whole. It is only by paying attention to the whole, that we can achieve harmony. And this will only happen, if every act is an act of unfolding, taken with enormous care and love.

I would not call this a religious view. Too many of our contemporary religions have gone overboard in their fanaticism, and often seem to pay little attention to common sense, or common feelings of humanity and justice. Many have become commercial or banal. These forms of religion have lost credibility; and besides, fanaticism will not help us to see our problems, or do better, in building and making the world.

What I have put before you, through the idea of unfolding, is a conception of God that is remote from these political movements.

It might be said that the work of God, in this modern sense, is that we feel an obligation to pay attention to reviving and keeping the beauty of the Earth.

It might be said – and this is how I myself feel it – that this is our modern way of praying. That is how we are able to pray: we do it by making some small corner more beautiful, and by categorically rejecting any actions which make it more ugly. This is the process through which we express our devotion. This is the way in which we pay our respect, and in which we honor the beauty that we have been blessed with.

At present, the technical and analytic mentality of the last 150 years has virtually made this impossible. In almost every walk of life – architecture, contracting, development, road building, house building, neighborhood building – this has been made impossible. We have accepted a system of rules, procedures, which can get things done – but which are not capable of nourishing, or even allowing, unfolding to occur. The idea of sustainable architecture, or sustainable design, which has become popular in recent years, has made a few people think that this might be a way out of the mess. They are wrong. It may help energy, and resources, but it is not unfolding – and our connecting to the earth and to ourselves, will still not be repaired, and until we learn to honor unfolding. And for that, we must make a determined, and uncompromising assault on the damaging systems of thought and procedure of our recent past.

And that, in a nutshell, is the reason we have put ourselves in such a mess.

In my second lecture, I shall go into some detail, about the nature of this procedural mess, and begin to set out conditions, and practices, new procedures, new forms of human organization, which are capable of helping us, and supporting us, in our desire to generate an unfolded world.

Since I have reached the end of my time, I haven't got time to go into the one thing I wanted to show you, which is a first sketch of a charter for developers. I can ask the organizers whether it would be possible to make copies, it's only one sheet, it's very summary, it's a draft.

I'm hoping to engage people experienced in development in the formation of this charter. I hope to begin that this coming fall in London. So, if we could make arrangements, possibly, to have this single sheet distributed. I can also tell you that I'll put it up on <www.livingneighborhoods.org>.

(chat with Hank?) Thank you very much, most appreciative...

Prolonged Applause. Standing Ovation

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