I like today to have almost an entirely a discussion period. xx I don't want
to move on to fast until I'm confident that all aux are really in tune with the
idea that has been presented to far. Now, I will just give a five or ten minute
introduction.

Where we got to last time, the thing -- We have got this idea that the environ-
ment is being generated by a language of patterns and I said very very briefly at
the end of the last lecture that this means that there are really two fundamentally
                    is
different views to design. One concernedxx with the design of a language and one
concerned with the application of the language. Now I perhaps didn't make that
clear enough. I want you to have a chance to discuss it. It also is the case that
speaking of the design of the language is a bit of a misnomer. What's happening
is that this language is xevolving all the time of course. It chances from year
to year and the most one could hope to do in the way of designing it is to play
a controlling part in its evolution. You just can't take it and say this is the
way it ought to be because it exists already in the heads of two-hundred million
people. Now in order to get the distingion clearer I'm going to use another
analogy which I have always found very very helpful. And that is an anology betweea
the idea of the pattern language axdx as the controller of the environment and the
idea of genes and the gene pool as the controlling patterns that guide formation of
all the organisms and species. You all know that an organism is built according
to the scheme layed down by x its chromosomes. That this chromosomes exist in
every cell in identical form and that there are on the set of chromosomes for every
organism a very very large number of little sections of the chromosomes it is not
known the exact number of the order of magnetude a is somewhere between 100,000 and
a million genes. It's not clear how many because they can't be identified

that perfectly. Now genes correlate with certain features of the organism that
is produced. So that in that sense the genes in the organism and the pattern
in the environmental pattern language. Here again the fundamental distinction
between application and design in the sense that the organism grows and develops
and is formed according to the genes, that is like the application of the pattern
language. On the other hand the genes - the stock of genes - that is the total
sum of all the genes in a given sub-population of all the species, is evolving
all the time - that is certain genes are becoming less and less common - other
genes are introduced and then spread and become more and more common. And it's
as a result of the process of this evolution that the species changes, and become
functionally better adapted or adapted to a certain extent - or what ever or how
ever it is. Now the distinction in the case of the genes between application and
evolution is absolute. And involve two separate processes. The distinction in
the case of the environmental pattern language is not that clear. Partly because
the - where as in the case of organisms a given new organism has a given set of
genes - at that point - at the point where application beging - that is at the
point where that organism beging to grow - there is no longer any evolution in
that particular body of genes. The chromosomes in that organism stay put for the
rest of its life and then that organism dies. So - there's a very very distinct
two step process. On the one hand you have the evolution of the genes stock - up
until the point where that organism comes into being and then you have application
or growth according to the patterns layed down by the chromosomes. In the case of
cities of course, something quite different is happening. Both processes are going
on simultaneously throught out time. Because the city as a whole never - well I
won't say never - but its a rare event for a city to die. So that what happens is
that those parts of the city that were constructed according to the proper pattern

as it was a hundred years ago ase to some extent still present. And the evolution
xhe of the pattern controlling the formation of that city goes on at the same time
as the application and renewal of the city according to the set of patterns that
is in existance at any given moment. So these two processes are overlayed. There
is also a second sense in which the two processes are not quite that distinct.
I think one or two people brought up that example the last time. When a par;ticular
axx acchitect énvents a new building form he is very likely doing both things
simultaneously. In other words he may be both drawing on the stock of available
patterns and simultaneously creating one or two new patterns as he builds that new
building. And this is the usual way in which this evolution has taken plaace. So
that even - I mean on the day to day basis the application ofxxhexx and the evolution
are not distinct. However, it is important to regard them as conceptually.distinct.
And that's what I want to be sure that we're all agreed on. And it is very very
important to recognize that since it is the stock of patterns or the pattern language
that creates the environment. It's the evolution of the pattern xhx language that
is far more significant of the two processes. And if we wish to control the environ-
ment and to make it well organized, that is the central process that we must address
ourselves to. The process of application is going on all the time and is not goi g
to improve the environment. Let me make that point again. Architects, planners,
and designers have traditionally considered it as their job to improve the environ-
ment. And they have been usually trying to do this by this mixture of application
and evolution of patterns. They have been doing both. But in view of the arguments
that I have presented it is quite clear that the application of the pattern language
per se though obviously crucial day to day process can not improve the environment
in any significantxxt sense. The only thing that can improve the environment is the
introduction of new patterns, the evolution of the pattern language

Question:

Reply: I mean use, by this I mean by an individual or by a body of indivuduals putting a real building into effect it does involve what you xax have said to some extent - it does involve cøzzz coordinate patterns - bringing them together. I've really gone about far enough to open a discussion anyway. The point which - I just want to emphasize again - the point which is goi g to be discussed in the next section - in the next few lectures - is whatxmakex why make such a big deal øfxø out of this because of course this evolution is goin on all the time anyway - and why is it necessary to distinguish these two processes so clearly and to focus on the evolution in a self conseious way and try and construct the pattern language abstractly and separately from the process of building. Now, if possible I'd like to stay ᴥ away from that topic today, because I haven't given any of the arguments as to why I think that is necessary. I do want to be quite sure that we're all agreed that the environment really does get its structure from the pattern language and that improvement of the environmentᴀ really can only be conducted at the level of improvements in the pattern language. Just as improvements in organisms can only be conducted at the level of _____nic evolution. Not at the level of the individual growth of an organism. Now, that's really waht I wanted to say today, I'm not giving a lecture. I'd like to have as much of a discussion about this topic as we can have.

Question:

Reply: I'm not saying that anybody can do the rest xø thoughx I think that the application is a very much easier task than the task of

than the task of invention and the evolution. It's certainly the case - if you want to look at the environment today and ask what in what respect is it different from the environment as it was 30 years ago. Let's not even talk about improvements -- we can ask whether there are any improvements or not. The sense in which which it is different is as a result of changes in the pattern of the language not as a result of individual application.

I think that there's no doubt that evolution comes about under present circumstances often as a result of application - is that what you just said - such as for instance let's take a new pattern which very likely will not take but nevertheless it is a new type of pattern - the moble lounges at the Dullus Airport. Now Saarinen obviously created those lounges in a situation where he was confronted with an actual job. The logic of trying to apply what was known about airports to date and making improvements where he tought that the current patterns were not succedsful. So under the pressure of that situation he invented a new pattern. As I say in the day to day basés one - the evolution very often comes about as a result of the experience learned in the process of application. That's a different point from the point that they are conceptually different. The fact that that new pattern is being injected into the pattern language - I don't think it will stick - but that's beside the point - that new pattern coming in to the stock of available patterns however short lived it may be is a quite different kind of process from the process of then applying that pattern. Now that seems vary clear - if it doubtful?
Question:
Reply: Can you give an argument as to why you think those go hand in hand? Where they have not in the past? Well, there certainly are plenty of examples where archi-tects have invented new patterns long before they were able to carry them out and build

them. Take as an example namely that a museum should be spiral shaped. Now, never

mind whether it is doubtful or not. It does have reasoning behind it. I think

Le Corbusier introduced this idea in this sketches probably like 10, 15 or even

20 years ago. And, see in that sense people can often invents patterns long before

they got a chance to try them. If you mean - Well now your raising different

questions - a moment ago you said you didn't think they could go on distinctly

now your saying will they be very good unless they go on hand in hand. --

Well, let me give an example - a guy in Colorado - designer of school equipment.

He is interested in the idea that young children should be able to learn under

their own steam - under their own initiutive, not always in classes. So he is

experimenting with the hexagonal kind of little desk each with - so now what happens

if a child sits here. On top of this is a beam - in one case for instance there

was a kind of plastic hemisphere with mice in it - and a whole lot of situations

to do with mice. X Here there were shelves - on these shelves there are available

books, film strips, and various other kinds of information samples which have to

do with the way mice live and there also were little film strip viewers and everything

like that - so the child goes to this situation and is able to learn about mice

entirely under his own steam for as long as he wants. He can then leave. Anyway

that the basis of the functional idea. Now this guy has been working on this thing

for about two or three years and will probably work on it for some time longer before

it actually gets used. It's not an application yet - I think its going first into

experimental use in schools some time this year. It's very certain that in this

case the pattern was being developed in isolation not in the context of the schools.

That example seems likely to take - that's why I'm giving it. I don't think as far

as I can tell this one doesn't have the obvious defects.

Question:

Reply: Right - no - I mean one of the things that we are going to have to deal
with is - your quite right that none of these patterns is any good until it has
been tested in experiments. Now whether that means actually having to test it
in a complete building - in that case you couldn't discover that without a project
probably - in that case it would be tested in relative isolation. That is true
but the - perhaps there's a - yes, let me try and make clear that when I distinguish
application from invention and evolution I don't mean that application is always
practical in building real things and evolution never does. What I mean is that
application involves the repeation or the recurrence of a pattern that has already
been invented. Evolution consists of inventing it and maybe testing it. Now, I
think that's probably enough about that. I mean the two things again, on the
testing will enevitably have some implicator in them.

Question:

Reply: That raises a very very hairy subject that we will have to gwt into later.
It is one of the current uses of design is that the guiding thought behind design
the understanding of function are based on values, moral judgement, what ever you
sight - which are in effect independent of the systems which can not be accounted
for in these factu al way. I will try to present arguments so that this distinction
and the values which stand behind criteria and the facts which are involved in whether
=the -- are in accord with those values. I think this distinction is quite mis-leading
and acutally wrong and infact if possible to do - what we're trying to do is if you
insist on that distinction. I'd rather not try to make that argument today. But
its interesting because this is a very very - its a crucial topic - there are those
who say more or less this - namely that man is kind of incharge of formulating all
goals and therefore he can direct things in the way that he likes to direct them.

And my position is much, much more - I don't know I - its been called organic. I

belive that it can be demonstrated that the criteria for the functional fx validity

for the system as a whole can be taken from that system and not imposed from outside.

In fact, I will try to make the argument that if you attempt to impose it from

outside its certain to be frutiless or take the system on the wrong direction. Now,

I dont' want to get into that today.

Question:

Reply: Well, that - its slightly diffécult to answer the question because who how

many different things have been called analogies. But, I can mean mention some of

the differences yes. First of all one of the assumptions that has been made quite

often is that analysis is an important process to be carried out before any _____

in the building process get built. In other words, just as a kind of extention of

the design process which goes on xxx differently for each set of buildings. In

other words - you want to build a hospital so you get some people to do an analyses

in advance and then you build a hospital. xF What I'm talking about here - the idea

haxax of a language at the root of it - the idea that these analyses will not be

done again and again and again for each of these buildings that you build.

That's true - and yet nevertheless there is an assumption in an anayasis as its

being conducted today that x when you start out to design a building or a piece of

a city or something like that you go all the way back to the criteria that are relative

to that kind of thing and then you start g trying to create whatever pattern - if you

want to call them that - the design that is appropriate. Now this is different from

waying now look the following stock of patterns exists in the language now and maybe

one of two of these are off slightly or maybe ax one or two new ones are needed.

This is a different kind of a thing. There must be - in what I'm describing there

is a much more conscious kind of borrowing of what exists. There is of course in

normal design practice and analysis borrowing from what exists all the time its just

not very conscious and as a result its not quite clear what your borrowing and

whether its valid in the circumstances you tie it too. The seoond difference is
this goes back in a sense - analysis if usually concerned with a the sbpx step
between getting from the need to form. The assumption is always that form in the
environment is to be arrived at after examination of the needs - diagram - the
difference of opinion I'm talking about is - the process it really has two stages.
One of which is ----------- generic patterns going Now there's a substantial difference
there - alright now let me ask you this - If the processe that is gong on at the
moment is already like this then one would expect to find a varyly large literature
dealing with the generic patterns, the conditions to which they can be applied and
the reasons for them. Where is that literature --------

Well, not I want to sort of press this po nt home because the people that are
most explicitly been _____ with analyses in 4ecent years - in methodology -
haxx sorry - I¦ll put it this way. There is a certain amount of literature on
generic pattern and if you look through m paanning xhannekxxandxaxx journals and
architectural journels and other design places you'll find references in their to
patterns - in some extent to what they do and whax whether they are successful or
not. The interesting thing is that these generic patterns have not often been the
work of methodologists and analysists. In fact, it's quite often that you'll find
an attempt to deal with generic patterns being make made be designers - the methodologists
do I think pxox broadcast the philosophy that one should always go back to the beginning
even though they axe recognized that there is some sort of literature which you can
borrow on but not a literature of generic patterns.

Question:

Reply: No, there's kind of a x misunderstanding there. What I said about the bonds
didn't - was not intended to say anything about the right way to redesign a barn or
the way that functions and flows - the point is that patterns that already exist
for those barns are actually based on not on a very explicit analysis, but thexe they

on understanding of functions of the flow - what ever you want - I'm not saying

it couldn't be improved - very likely it could be improved. The critical issue

is - in what form is all ov this information transmitted. - to where does it

stick to what -- what I'm tryin g to argue is that -- I'll put it this way. Let

us suppose that an operations researcher did an analysis of that kind of a barn

and came to the conclusion that it was possible to do a better barn. I'm making

the following assertions - that that new kind of barn would not get transmitted

in the form of an understanding of flows andfunctions but it was in the form of

a new pattern which was based on - which was the product of that analysis. But

the thing which gets transmitted - the thing which is remembered, understood,

and duplicated is a pattern not an analysis. I'm not making the argument that

patterns are not based on analysis. In a sense you could take - if you like you

could treat my statement as statement about human membry.

Of course, absolutely, the functional analysis which stands behind the pattern.

That I take for granted and we'll go into it.

But it is important to understand the way in which these things are getting

transmitted. This is a very crucial point - I suspect that x other people have

feelings on this topic and I like to go on discussing this.

Question:

Reply: Well, its almost worth going into the genetic analysis to try and bring this

point home. The acceptance of a new axn gene into the gene pool that is its been

a mutent and its sick. Is of course based on a functional situation. That is it

spreads because it reproduces well and its functionally effective. But the point

is that what spreads is the genes not the functional analysis of the new to get

more food or the need to run faster like that. But again its the issue - what is

the item that spreads.

We Very well - very closely. The difficulty there is and this is apaknkx a point

which will discuss sometime next week. That prototypical design - which is what

those magazines publish never distinguish clearly in the essentials of the patterns

and questions and the action which has to do with kind of local conditions and

the way these patterns have necessarily been put together is because of that situation.

So the fact - this is a good point - the use of prototypes in design is the closest

thing which now exists to what I'm talking about. But it doesn't work very well.

Is it necessary to give an example? Ok.

Right - that's a fairly good example.

Oh, alright here's an example. It's not a good one but quite easxk easy to

deal with. One of the propotypes which has been under inspection in recent years

in architectural magazines is the courthouse. The court and the courthouse can

be either totally imposed or imposed on three sides. Those are the most common

factors. Something like that. Now, one will find drawings sections of the court

houses with the arguments given as to what makes the courthouse a good solution

to the housing problem but no discussion of how much that dimension may vary and

still maintain the functionality of the pattern. No disuussion of precisely what

this meansx needs to be next to - in other words in a given prototype it may be

the case that there happens to be a kitchen here and a living room here let's say.

Now, when your confronted with a drawing like that its unclear as to whether - is

it crucial that the kitchen and the living room indeed be on that^{two} side of the court?

Or is it merely crucial that the court have assess from some living area or is

that in fact an arbitaary feature of the pattern which doesn't makter at all and

justx it would be just as good for that court to open off a passage or off the

bedroom part of the house. I'll come back to that example because there are quite

a lot of things about courts that don't work so that its very very clear that some

of these relational features are crucial and yet there is no way of getting them

across in an actual plan or xp prototypical drawing. In other words, the essence
of a pattern that its an abstract entity to some extent - there are certain abstract
relational features which must be preserved and a single drawing or even set of
drawings doesn't suceed in that.

Question:

Reply: I agreed this is - this has not been made clear so far. I will be able
to make it slightly clearer as we go on. xx I mean I'll be able to give a formal
abstract definition of what a language is. But this alwasys remains slightly
_____. I mean just to clear it up to begin with. In a fairly loose way - the
language consists of the rules from of combination. In that sense - here's the barn
the language - and _____ the answer is definitely known. Now
sometimes the language tells you which patterns are allowed to be combined with
which others and in what matter. That's the function of the language - while
maintaining functionality. What does happen - and this is where the question becomes
tricky is that as we'll see later - its necessary that the language xxxxxx contain
not only atomic patterns - that is very small patterns - but also higher order patterns
which indicate ways in which some of the lower order patterns can be put together.
These higher order patterns play a slighly optional part - optional role in the language -
which we'll have to study but it could be the case that a thing like a three-saxxx story
- somebody for the first time builds a three-story barn - and then there are certain
features of that made may get adopted - that may become a higher order pattern which
gets embedded in the language which goes back to the question slightly that was
raised in the back of the room - often it will happen that new combin ations are
created in accordance with the rules themselves become important enough to be retained
as permanent features of the language. That is an important process. Distinguishing
that process from - one could just take a jumpax and say well in that case is every
building a pattern in the language and then what the hell are you taking about.

And we will have to distinguish sharply in which cases these higher order patterns

can reasonably be regarded as elements in the language and when there not. Basically

it has to do with recurrence. Is the combination which has been put together -

there will be certain features of combination which are put together that are unique -

that are so much dependent on local situations and so - that they don't posses any

particular quality that would make it sensible to repeat them in like situations

or like situations will not occur. When a pattern has these properties - a higher

order pattern has the properties like that three story barn you suddenly realize

that when that barn was built - well suddenly people realize that you can build

barns on a steep slope where they might not have been in the habit of doing it

before. So in that sense you get an insight to the information.

Question:

Reply. Ok - let me say somethings about this. Because there have been fairly

deep studies of the formal properties in that language in the last few years. I

don't want you to get a misunderstanding - this is a very very close analogy.

In other words natural language has a specific kind of syntac which is now

_____ fairly well. Those of you that are interested finding that out

to go and look at the work of Chompski and his collaborators at MIT. I would say

quite certainly that the collection of patterns that we're talking about does not

process that kind of _____ structure. The reason for calling it a language

though is there really are certain rules of combination and these are plainly - there

real - they must be present for instance in the mind of the guy who built barns

otherwise various features of those barns could never get together in an organised

way. It might be a little exercise it would be forth your while to play with to

ask what kind of rules and combinations would be likely to make a set of patterns

coherent. This is a very very difficult question. I'd very much like to you _____

onto that to your selves - those of you that are interested.

What - ø in other words - we won't be covering it for something like three weeks.
But in that time it would be very worth your while under your own steam to think
what the rules and combinations are like to make the thing work.

Oh, xxxxx incidentally a reference just in case - some of you may be interested
in a book called The Shape of Time by GeorgeKubler. Who - he's one of the few
art historians who has looked at the history of objects - artifacts and sculpture -
whxxhx with something of the slant that I'm giving you here.

Question:

Reply: Right now. I'm glad you brought that up. When you say it xxxx establishes
the culture - xnxxthexxwxxdsxxxxxxxtxkkxxgxxbxxtx another way of talking about it
might be that the pattern and the language are the culture. So obviously here we're
only talking about x a certain segment of the culture - because culture transmitts
not only how to build things but obviously how to behave and how to organise society
and how to do a lot of things like that - but this body of patterns together with
the rules of combination are the culture. Culture is the dexxdx device by which
these patterns are transmitted.

Question:

Reply: It is difficult. Later on I will give - well I can give it now rather
hurriedly the reason for this - the reason that I gave so far was that all the
people _____ with design have traditionally been interested in it.
There is a reason that is quite powerful. That is this - if one is truly going to
get at the way in which all of these different things interact - it is necessary
to have a medium within which the interaction can take place. Let me just make
that point clear. One of the reasons that economists can be successful is that
they have been able to spread a variety of phenomena in terms of money and money
is the medium - if you like - in which the interaction between all these different
things that economists can consider takes place - its the glue. And the fact you

need a medium - a universal medium - so that every thing that you want to talk about as interacting can be related to that universal medium. In _____ mechanics and physics this universal medium was taught. Medium is somehow the wrong word there - its not quite right. But anyway - when you can express everything that you have to deal with in terms of xxxx force - then you can study the interaction of all of those things. Now there is no such medium that I know of - for culture at large. But space does provide such a medium for a very very vast variety of phenomena. So that by restricting ourselves to those aspects of culture which have an effect on spatial organization or which are concerned with spatial organization, we build in right there the possibily of studying the interaction between any two things which have tox xx do with space. So that xxxxx this is a x faily powerful argument. The analogy there xx between space for us and x dollars ofx for the economist.

Yes, as this gentlemen said the ultimate of what the whole message is really about is really functional. That _____ it is not space. It has to do with needs and forces and at various times that are going on. That's what organic progress is about. But x by increasing only those phenomena expressed in terms of xx space we have the opportunity to put them all in the same picture.

Question:

Reply: I don't want to answer that now. Your quite right. I haven't said enough about it. I haven't said anything about it. The reason is simple, in order to
                                                             need
study the relationship between a pattern and the xxxxxx that it satisfies you really have got to have a very very sharp definition of a pattern and I can't intro-duce that sharp definition until I build up your intuition to the point that it is clear that these patterns are the nitty-gritty of the phenomena. When we've got to that point then we can say the definition of a pattern - and now we can start talking about the whole need background of the pattern. That will be about a week from now.

Yes, I am saying that. Let me ⨯ modify it slightly. I don't think that any
                                          together
pattern is transmitted unless it gets transmitted with an understanding of why -

that is of the fact that it is a need fulfilling pattern, you see what I mean.

I'm sure that they never get - or vertually never get propogated for no reason

at all. So that a pattern is and we will in fact - a formal definition of a pattern

treate it as an integrated unit which has a spatial character and a functional

character. This is quite essential.

Question:

Reply: Yes,