

November 22, 1967

Lecture 23

In today's lecture we're going to move onto the general subject of coordination and I'm going to give this, as you remember, as the fifth of the subjects I outlined at the beginning. I'm going to give this very short shrift, because we're running into a time bind.

Before I begin, I want to make one quick comment. Somebody last time asked a question in view of the organization of retrieval that I described, doesn't the context become more or less useless or at least its not being used so what's it for. Now it is true that the context of a pattern doesn't play a great part in retrieval. I didn't response to the question adequately. I want to make this quite clear. As I warned you early in the quarter ~~xxx~~ there is really a lot of ground for ~~xxxxx~~ believing the context and the patterns, small patterns with small _____, form on entity and the only reason for distinguishing context from pattern there is as far as the logic of the problem is concerned, its still true that context is that part of the time which sets up the conditions that create a problem and make the other part of the thing necessary. But as far as use within the language is concerned, it is a single entity, so that remark, that question that somebody asked is not really a surprising fact. It's only the words maybe that suggested that the context should be playing an important role during use.

There are two different issues of coordination. One of them is purely geometric and that is what I'm going to be talking about this morning. The other one which is functional, I shall talk about in the next section. In connection with the system of culture as a whole.

Now, the kind of coordination which is required is very simple. Many of you have drawn attention to the fact that different patterns may turn out to be incompatible, that is geometrically incompatible. In fact some of you have indicated that you think this is ~~x~~ happening a lot of the time - there's no doubt it does happen quite a bit.

The important question is what does one do about it when it happens and what part does this general phenomenon play in the theory of the pattern language as a whole. How does one deal with it?

Roughly speaking the way of dealing with it that I'm going to talk about has to do with the construction of higher order patterns or composite patterns. These have been mentioned informally from time to time. And they are patterns which meet conditions 1 through 3 by not 4 and 5.

There are really - there's a kind of continuum of degrees of incompatibility that one can run into. At least - well I won't write them up - I'll mention three and we'll just look at them.

The first level is one where given a set of patterns it seems that they are incompatible but this turns out not to be true. So that the incompatibility is only apparent. That is, in my opinion, the most important case even though it seems trivial.

The second level - the second degree of difficulty which occurs - occurs where there really isn't any incompatibility but it only occurs because the patterns are not - the contributing patterns are not stated abstractly enough and just by stating them more abstracting one gets rid of the incompatibility.

The third level, is the case where there really is an incompatibility and in order to resolve it one has to go back to the tendencies at work in the components ^{with} ~~xxxxxx~~ patterns and restate them at a deeper level.

I'll give an example of the first kind. It's worth mentioning I think that one has a case of it even in the ~~xxx~~ house entrance material that I gave you. I remember showing that set of patterns to various people who have said - well, all these things are all very well but actually it's impossible to create an entrance that has all these properties and there is this kind of blind spot thing. It's

important to deal with it within the language because obviously somebody whose
and who
using the language comes to that conclusion is going to abandon some of the
patterns. So it's that the language guide the user in the sense of showing him
how to put together apparently difficult, apparently incompatible patterns.

I want to talk about a slightly more serious case. I think I can make an
incompatibility seem real to you and then resolve it. This is again in connection
with the house entrance but let's now assume that we have all those patterns and
that we also have a pattern which says something like: In a family which is organized
fairly traditionally where the woman spends a good deal of time ~~x~~ cooking, it will
be important to have a ~~good deal of time~~ very close association between the living room
dining area, and kitchen - so that any time that she spends preparing foods she
can nevertheless still be with the people who are in the dining part or the living
part. A fairly common fact in many suburban houses.

In connection with the whole organization of the entrance that I showed you, it
did seem that in any likely realization of that set of patterns, one would end up
with a situation which I ~~x~~ can schematically put - if this is a sort of hall entrance
business here and this is the door and the kitchen would be sort of way off down to
one side and hanging low and the living room over here or back here. At any rate
they would be fairly strong and separate, remember the things that control that
~~xxxxxxx~~ was the business of not being able to see the kitchen as you go into
the living room, not having cross circulation in the entrance and a number of different
things like that, or trying to avoid that.

It's obvious that any - in the sharpest form of this if the living room is over
here and the kitchen is over here, the pattern that I've just mentioned becomes quite
impossible and it seems kind of likely that this - that that whole bundle of patterns
together with this one new one that I've just mentioned are going to present serious
difficulties and this is the case - this is the sort of thing that we're really
talking about at this first degree of incompatibility.

I want to show you a pattern higher - a composite pattern that Fred Osmon devised which happens to resolve this in an extremely beautiful way. He - this is in an actual ~~xxxxx~~ house which he ~~designed~~ was designing when he came up against this difficulty. There is also - there was a further issue that he had to deal with also, which had to do with garbage disposal, the entrance material that I gave you, when you come up against the problem of garbage disposal ~~xx~~ it's also fairly difficult to see exactly how those things, the garbage cans, are going to be placed in association with the kitchen and not in a kind of obnoxious way right in the middle of the hall approach.

It happens that that is solved within this - now, this pattern represents the following situation. Here's the kitchen, this is the main entrance ~~x~~ to the house, the main door. There is here a kind of corridor or vestibule, this is a glass door and this is a glass door, and there is - this is a working ~~xxx~~ surface inside the kitchen, there is a window looking into the vestibule set ~~x~~ high enough so that its well above the working surface, but nevertheless anyone working there can see out all the time. So that essentially, we got almost completely glass wall here and those two doors placed like that and the access to livingroom is thru there - its not important how that happens, except it is important because the living room, and then the dining room and then the kitchen can be associated in the manner required at the back there.

Now, this happens to deal with all or any way a very very large number of the entrance patterns in a rather surprising way. That is by putting this kitchen within the thing but making a second window you give this whole situation just the right amount of obscurity and yet the person inside here can see - I'm sorry - of course the critical pattern where it states, relates to the can one make the kitchen have an overview of the ~~xxxx~~ front door nevertheless at the same time doing all the other

things that we've talked about and this is successfully achieved here in a rather good way.

In a case ~~x~~ like this, it is rather important that this pattern should be in the language because somebody might as I said struggle for a long time saying look there just is no way around this difficult thing, I'm going to have to sacrifice something and this is an indication that there is a very good way around the difficulty. There are probably quite a ~~no~~ number of others. By the time that one is taking about higher order patterns it is clear that any pretensions to uniqueness have got to go, I ~~ought~~ ought to make that clear, and there there merely ^{that is for} for the sake of memory, ~~maxxxxxx~~ reminding you of forms of composite organization which will contain a large number of patterns - no sense that this is the only way of doing that.

So the language must contain these kinds of patterns.

Now, the second sort of difficulty is again really a pseudo-difficulty. This is the case where the individual patterns are not stated abstractly enough. There are difficulties here about how to write patterns, we've run into this before, that it's hard to write a pattern in such a way which makes it clear that the relationships described are very very abstract and not hung up with a particular graphic representation given.

I'll take two examples here. One of them is the case of Ron Walkey's central business district loop that I've mentioned before. His loop is an eight lane freeway surrounding a central business district with a number of access freeways - I think he actually gave four ~~xxxxxx~~ but that's not a crucial number. The question is - it that's one pattern and the - you have on the other hand the parallel street pattern says that the freeways should be parallel and at about 2 to 3 mile intervals, it would seem difficult to connect these two things up. This is a fairly obvious case where that claim is just silly because of course you can lead these ~~th~~ freeways away

from the central business district in such a way they do connect up with the parallel freeways provided that you don't insist that that 2 to 3 mile limit hold absolutely through out and there is also the fact that this applies only in the medium density areas and the low ones where as this will tend to be a very high density so there will be a zone of- there'll be an intermediate density region where this transition can take place anyway. But ~~x~~ here again, well let me give one more example, similar kind of a situation where - in a paper of ~~x~~ mine that I've refered to ~~xxxx~~ one of the patterns that I've mentioned in connection with contact in the city, was the possibility of providing a transparent living room immediately on the street. I won't go into the rest of the ~~xx~~ organisation of the house that backs that up, which makes sense of it, so the purpose of this lecture, the point is if your having a transparent living room right on the street, and the entrance is presumed to be through it, again that would seem to be entirely in conflict with the various materials, the various patterns concerning entrances that I've given you.

Here again, in the particular case there I, there was a drwing accompanying that pattern which actually represented an organisation of a house in the following manner. where these are all private and completely secluded parts of the house and this is the transparent living room on the street and access is presumed to be through here and that was the way it was drawn. Of course, if access is indeed through here then it is totally in conflict with the entrance pattern. On close examination of the argument behind this pattern it becomes clear that what's crucial - the crucial relationships have to do with the fact that this thing is separate - this transparent room - sorry I ~~w~~ forgot to mention there is a garden or court here, sort of like this - that there is that sequence to the street and that these individual pieces of the house

also exist as separate, but the idea that the entrance has to actually take place straight into that living room is not crucial and was simply a mistake of the original statement of the pattern and by abstracting it correctly one can then connect it up schematically so that the whole organisation of an entrance that I've been talking about could occur in that general area and this relationship could hold as stated. So here again it would be wise to include a higher order pattern showing something of that kind in the language. A lot of these higher order patterns as you see, ~~xxxxx~~ ~~xx~~ play the part - there not so much instructions to the user, they are statements to the effect that the incompatibilities are not as bad as they seem. And I think that once after looking at a number of higher order patterns of this kind, then the exact level of generality of the individual component patterns becomes clear and the user will be much much readier to discover new ways of putting the patterns together and will not get so bogged down in the thought that their incompatible.

The third kind of difficulty is more serious. And that is the case where there is a - take for example the pattern that I've mentioned before about the number of houses that must be within range of any given house in an area where there are pre-school children living. That number has to be quite large, somewhere between 20 and 30 and on the other hand the demand that small children need open space and therefore this is one of the reasons that there parents move towards houses which are on fairly large green grassy lots. Now obviously those two things are very much more serious kind of conflict. Now, what I want to draw attention to there is that those two things - those two statements on the one hand the statement about the number of houses accessible with 100 yards of any given house - and on the other hand the statement about the size of lots. Those two are really not legitimate patterns at all, because in view of this very genuine, serious conflict, neither of them can be said to satisfy

condition three. So in that case, one is really back not in the problem of incompatibility among patterns but back in the problem of fashioning a pattern which resolves the tendencies at work and in that case of course you have to go back to the tendencies and ask - what is the - try and abstract further and further the problem of the children needing to be within adequate reach of a reasonable number of other children. At the same time the provision of open space - that is - is required. Here again, by going and looking at the tendencies carefully in this particular case, there are ways of resolving the difficulty. For instance, more casual analysis of the the situation leads you to the conflict I just described. When you look carefully at the amount of open space that a pre-school child actually needs you find it substantially less than the amount given in the very very ~~xxxx~~ loose large scale suburban organization and that it might therefore be quite appropriate to create special housing for people going through that phase of life, which would have a different pattern of open space associated with it. The need for really large lots and entirely open organization doesn't become critical until the children ~~x~~ get to be really more like 7 or 8.

There are other ways of trying to resolve these tendencies too. By asking - as I've mentioned before - questions about the what is it people are really after - they want to be able to see the outside of their own house. They want the feeling of ~~xx~~ ownership - all these things are known tendencies and are documented and ~~wxxx~~ when you get down to grips with ~~xxxxxxx~~ them abstractly as that its usually possible to invent forms of organization which resolve the tendencies. But any way that third case is different. It is not an incompatibility between patterns, between the proper definition - that is part of the struggle of creating primary patterns and needs to be thought of that way.

I want to mention two points about this whole - not the last issue - the last issue I'm going to go over for the moment. But the problem of introducing higher order composite patterns into the language to get rid of apparent incompatibilities and the resolution of these - of incompatibilities between patterns as stated

what can one do about that whole process. A rather superficial look at the situation might suggest that you could have some sort of ~~na~~ mechanical way of looking for these incompatibilities. In other words, suppose we have a pattern language right now and then every time a new pattern comes in we immediately check it against all the other patterns in the language to see whether or not any of these sorts of incompatibilities are going to arise and then we get rid of them if we find such incompatibilities.

Now, that's not possible. I think the easiest way to make that clear is to point out that even fantastically simple kinds of incompatibilities often represent deep and unsolved theorems in geometry. For instance, the four color conjecture that most of you probably know states that given a map in two-dimensions you - it can always be colored with four colors in such a way that no two adjacent ^{countries} have the ~~same~~ same color. The conjecture says that ~~xxxxxx~~ there will never be a map which requires five colors. But that conjecture is unproven. It's been unproven for about 100 years. It would be quite conceivable for instance that there might be a pattern in the language, I'm making this up of course, there's no functional reason for it, I just want -- it's quite conceivable that there could be a pattern which says something like there should be an ~~an~~ arrangement of zones such and with some sort of a prescription on the required adjacency which are mounted to having to find an arrangement of them in which five colors were necessary. Now, there might very well be two or three patterns which taken together had that consequence.

Now, it's obvious that we couldn't hope to find a simple mechanical way of checking ~~that~~ that out and ~~na~~ knowing whether this was an incompatible and unvisable demand. The fact that people have been ~~xxx~~ searching for a hundred years for proof of a theorem makes it clear that there is not going to be any quite mechanical procedures for doing this sort of thing. Any hope of finding such mechanical procedures is beside the point. What I'm getting at is that the new apparent or real incompatibilities

are going to keep ~~g~~ cropping up as you use the language you can not hope to radicate them at the moment that you introduce new patterns into the language. Now that is really the crucial assertion there. In the same way as the thing with Osmon, I think it would be quite - it would not have been possible to have done some sort of a mechanical check even assuming that that kitchen ~~xxxxxxx~~ dining room, living room pattern were somewhere in the language it would not have been possible to do a mechanican ~~xx~~ check which would bring out the possible incompatibility and one just has to wait until it happens and then deal with it and then inject a composite pattern which represents a solution back into the language. So this is a continuous ~~xx~~ process.

The only thing that I want to say about construction of these higher order composite patterns is that we are here dealing for the first time with something that is more or less akin to aesthetics. The point is like this. It is clearly difficult to invent forms of organization which contain the very very large number of patterns which a building must contain. Particularly as we make up our patterns as explicit as I have been it becomes more and more difficult to find buildings with complete solutions which actually contain all these patterns.

It's also true that well organized things, beautiful things, are usually those which have a very very high density of patterns in them, simultaneously. I think one of the distinctions between nature and man-made - natural objects and man-made objects - is in a natural object there tends to be many more relationships concurrently than there are in man-made objects. X Squashing all of these patterns together is a very difficult trick, and in doing it one is already begining to approach something aesthetic in a sense that you have to be quite an artist to do it in the first place. But now there is a further point which has to do with simplicity and that is the following: See, ~~x~~ on the basis of everything that I've said so far there is no particular justification ~~xx~~ for trying to make things simply, or beautiful, or elegant. But at this point that

we're at now there is a very strong justification for it - a necessity for it. A simple form is always more liable with respect to potential patterns that are going to be injected into it and a complicated form. In other words, if you have a very very complicated differentiated form, the chance of being able to take ~~xxx~~ yet one more pattern which expresses yet another relationship among the parts that are in it and superimposing it successfully on that already complicated and rather rigidified differentiated structure - the chance of being able to do that successfully is quite slight. Compared with the chance of being able to do it in the case where you have simplified the original form and I mean simplified in the most ordinary Gestalt sense, where you have succeeded in simplifying the form - the chance of being able to inject patterns into it goes up. So when you are dealing with the difficulty of compressing many many patterns into a ~~x~~ small compass - it pays off and becomes necessary even to simplify the forms of organization that you choose.

It's not easy to define this ~~xx~~ process of simplification exactly. Those of you that want to look up material on this, it will be worth looking at anything you can find in the literature on Gestalt psychology on levelling and sharpening. It's mentioned in Anheims book, there's a short section on it, there's an original paper on levelling and sharpening by ~~xxx~~ Wulf in Source Book of Gestalt Psychology, edited by Ellis. There's a paper of mine that might be worth looking at called the Origin of Creative ~~xxx~~ Power in Children, which deals with this topic. Mannheim and I also used it not quite in the way that I've been talking about here - in the Superimposition of the diagrams in the ~~xxxxxx~~ paper called the use of diagrams in highway route location but that was really - that is no ~~xxxxx~~ more than suggestive in connection with what I've just said. It was really a slightly different use of this same technique. There's a paper of Rusch's - was it his master's thesis - on a series of drawings of bulls by Picasso where he looks at this process of levelling and sharpening - because again it's quite apparent that Picasso in order to condense the maximum amount of patterns into those bulls or into that bull is having to simplify the form constantly so that he has

room for more patterns to inject into it. This is essentially what I'm saying to you.

This is where the construction of these composite higher order patterns becomes really crucial because in that sense they are doing slightly more than just telling you well the pattern which seemed incompatible ~~if you do it like this~~ are ~~actually~~ actually compatible if you do it like this. Its doing more than that. It's saying a good composite pattern - I think the example of Osmon's that I gave is a reasonable example - actually has a kind of deceptive simplicity about it in which an enormous number of patterns has been ~~gxxx~~ crammed in and therefore becomes a very very useful object which can then be again used as a building block in a higher order process. That's just another way of looking at the same point.

If these higher order pattern - these composite patterns - are themselves to be used as building blocks in yet higher order prophecies than obviously they can't be too complicated otherwise there'd be no chance of really being able to ~~but~~ build with them and weave them into one another. So they must be simplified yet again so that they can be recombined at a new level. Now I think I'll stop there. I suspect there will be questions about this last part. I'm being partly intuitive about it but I would like to have discussion on the matter.

Question:

Reply: I'm glad that was brought up - I'm definitely not talking about doing away with the lower order patterns. It's true that it was - there was some material floating around the school at one point where we were investigating all the different sorts of logical realtions between patterns that there could be - at one time that seemed like a fruitful thing to do now I don't believe it is. What i've tried to say this morning is really different from that - I'm saying that the lower order patterns remain the fundamental elements of the language but simply in order to help you - you do remember x certain higher order patterns also - its not so different from

case in language where although the words are the basic elements of speech one also remembers many kinds of characteristic phrases and sentences which you don't bother to reform every time you use them. Good morning, how are you - I mean that type of stuff and also silly ones. Of course the fact that these phrases and sentences remain part of your equipment doesn't mean that you then eradicate the words their made of, you still use those words because you may actually make other things out of them also. I think that that is perhaps a very valuable analogy. I haven't answered your question really have I?

Student:

Chris: There is one thing that I haven't made clear. I'm a little reluctant to get into it and that is as far as the hook up is concerned - the memory - and its relation of identification - I'm reluctant because I know its pretty boring and its also kind of hard when I'm up here with the blackboard and there's all that obscure stuff a going on. But the fact is that these higher order patterns can be included along with all the other lower order patterns and this identification relation can be made with them and there's no need to distinguish them logically from the lower order patterns. In other words, they can be given the same status within the language as the lower order ones, hooked up with everything else in the same manner and all the question is is this one a sort of part of that will be taken care of automatically by the hook up process. I would rather not go into that because I know how boring it is. Does that partly answer your question?

Student:

Chris: Well that's a tricky question. The reason its tricky is first of all I don't know the answer because I haven't done enough of these things to have had experience with that situation enough to report on. It also raises the rather

irritating question - look, if there are ~~x~~ 10,000 patterns in the language there are 2 to the 10,000 possible sub-sets and if one ~~xx~~ is going to have a different higher order pattern for every possible sub-set this thing is going to become insane. ~~x~~ So I kind of hesitate to ~~x~~ say yes there's a different higher order pattern for every possible sub-set. at the same time I don't really know how this works. I suspect that what happens is there are only certain sub-sets which are genuinely recurrent in any important sense ~~x~~ so those are the only ones for which you bother to put the higher order patterns into the language.

Student:

Chris: Oh, yes, definitely. Of course. There's no suggestion here that all of the higher order patterns are going to be in the language for you to borrow. I mean definitely the user is going to be constructing them all the time. In fact one of the things that we'll get to in the last week, when we start talking about what the profession would look like if this whole theory were well developed, is what is a kind of reasonable ~~xxxxxxx~~ living relationship between a number of designers and the language. Because it is obvious that each time that one of them takes some action that he is generating material that will be useful to - for instance I only happen to get that thing of Osmon's by chance. He was ~~x~~ interested in the entrance material, he was working on a house, and then he came and showed ~~xx~~ it to me. ~~xxxxxx~~ Everybodies going to be having good ideas, how much of it can one tolerate to get into the language, how much of it should stay personally - you know it's a fairly tricky question - I mean a practical question from the point of view of having this as a normal design tool.

Student:

Chris: Very much so, yes. That's a good point. Now that has also happened once or twice. Let's see if I can think of an example. Sometimes what goes on is you

have some patterns, you find that it's difficult to combine them, you combine them in this higher order pattern, you then realize your original statements of ~~that~~ these were not very good, and if you stated them more sensible there would not even have been an ~~a~~ apparent incompatibility and it would have been perfectly obvious how they went together and at that point you just redefine those and rub that out. I'm glad you mentioned that because that has happened to me quite a bit. I can't think of a case now.

In some ways that would be the most elegant thing of all. If you kept doing that because I think its pretty clear from your question, one doesn't really want to remember these higher order patterns and in a way there a bit of a nuisance just because of their number. So if you could do what Bob ~~x~~ suggested ~~at~~ all the time then the thing would become very nice. I'm afraid its a slightly ~~x~~ unobtainable ideal in a lot of cases that's all.

Student:

Chris: Oh, because I think we tried to discuss that once before, I realize that its badly defined. You remember the weak point that I drew attention to was the fact that one is often invited to go all the way back to the most basic needs. When your dealing with a number of tendencies which do apparently seem to create a conflict, that doesn't mean that you have to go all the way back to the basic tendencies - it just means that you have to go far enough back to try and get rid of the conflict, ~~because that may be~~ and that may be a very short step and there's precisely how far you should go and no further. I would prefer not to go into that area ~~xxxx~~ unless there are more quest ons more about today's ~~x~~ thing. I'd like to deal with that, but if there aren't we can try - there was an example that I gave to a number of people in my office that day which obviously --

Student:

Chris: I think it is, yes - usually true that those things that have been around for hundreds and hundres of years tend to have all kinds of subtles that one doesn't

appreciate at first, in them so that every feature in them is actually doing many kinds of work, we discussed this right at the beginning I think, in connection with barns, I think this is very true.

Student:

Chris: I'm not saying that higher order patterns automatically have the feature of simplicity at all. I'm just ~~x~~ saying that when you get into the construction of higher order patterns the need for simplicity becomes doubly apparent. In what we've said so far there really hasn't been any obvious reason as to why it was necessary. But when you start talking about how to have several patterns coexist within a small compass then it becomes really clear why you have to have things simple. I want to make it clear, the argument that a simple object has kind of more room for different ~~x~~ patterns in it than a complex object is a ~~ha~~ very hairy argument. It would take a long while to try and develop it, maybe I ought to make a sort of indication of the way the argument goes. * A simple thing tends to have more relationships in it, in the sense of more available ~~xxxx~~ symmetries whereas in a complicated thing, you've usually thrown away the symmetries one by one as you've had to get in more and more kinds of structures. It's because of ~~x~~ -- that's why in the complicated objects there are not many of these symmetries left to do anything with whereas in a simple object there is still a great stock of them. I think an obvious way to make this example is that - suppose you were given one of those party games or the things that children are sometimes asked to do, where you have - your given some kind of an abstract shape and your asked to make as many different things out of it as you can. It's pretty obvious that you can make more different things out of that than you can out of that. I think this is intuitively clear to anybody. It is fairly hard to - it is very hard I should say to explain this ~~xx~~ on theoretical grounds. But that's the same phenomenon precisely.

Student:identifying the lower order patterns easily.

Student:

Chris: I think there are purely abstract structural features which make this simpler than this. It's not just a matter - I don't think ~~xxxxxx~~ we're just referring to this has more potential than this. Your saying that this is one of the things that we may mean by the word simple - it has more potential in it.

Student: Something about preferring the more complicated higher order pattern.

Chris: Well, no this is very -- I don't want to gloss over that - the trouble is that we're not defining precisely what we mean by having to inject further patterns into this.

Student:

Chris: It's hard to answer that without ~~x~~ knowing what the specific relationship here were that mattered.

Student:

Chris: I'm not completely clear what your saying - your saying this is not as resolved as that?

Student:

Chris: Yes, that's the whole point. In other words if you can succeed in getting a higher order pattern into this kind of condition you've got more hope of being able to inject other patterns into it. This is on the whole rigid. I don't know how to answer your.

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