

Now, today I'm going to start the third section. = In this section we will, this is going to be a fairly long section - we will define the individual elements of the language. Now, every element - the elements of the language are going to be called patterns. And every pattern is a statement and I mean that in the perfectly ~~literal~~ literal sense. Consisting of four sections. The first section is a summary of the other three sections and will be used for quick reference - that's all. That section will not usually be more than a couple of sentences. Three or four maybe. Now the three main sections are to be called Context, PATTERN and PROBLEM. There is a slight ambiguity - I'm using the word pattern in two different ways. I'm using it to refer to the whole thing - that is a pattern - and that whole thing is one item - one element - in the language. But pattern is also being used to refer to the key section of this triad. There will not be any ambiguity I think in actual use. And it seems more convenient to define the things in this way rather than to use separate words. Now, in order to illustrate these concepts, I will deal one or two examples this morning as I go along with the definitions. I want you to bear in mind that although the examples that I'm giving here happen to be at a scale of feet that the concepts we are talking about could apply ~~xxx xx~~ equally well to very minute deals and also at the regional scale of miles. So the concepts are quite general. ~~Nowx~~

Now, the pattern section itself, which is the most crucial one, will assert a physical relationship among a set of parts. So that every pattern statement ~~xxx~~ every pattern section here, contains both parts and relationships among those parts and these relationships will be spatial. Just what the parts can be like will define each one of these things with more care in one minute.

Now, the context statement is also an arrangement of parts ~~pass~~ in space, though it can happen in this case that there might be no more than one part and in fact the



nature of the part, the definition of the part or parts, becomes especially crucial in the ~~x~~ case of the context. The problem is to be thought of as a kind of corsal string which relatés the context to the pattern. Diagrammatically one might think of this in these terms. So that what is being asserted by this triad is that in a stated context a specific kind of problem arises and in order to solve that problem one must also inject the pattern into that context.

Now, I'll give an example, so as to get away from the abstractions. I think I'd better come close to dictating this because I'm suppose to get as much detail in as possible.

There are minor inaccuracies in what I will read out and your free to criticize those and we'll discuss some of the inaccuracies after. I've given you the whole thing. Now the summary in here says the following. This is ~~am~~ just giving you an idea about what the whole pattern is about. It says:

**SUMMARY:** In some residential zones it is difficult to locate house numbers from a moving car, especially at night. The difficulties are eliminated if house number signs are about 45 degrees to the street and the sign numbers are about 12" high.

Now, the context here is the following:

**CONTEXT:** A free standing house on a street where cars move at speedd between 5 and 30 miles an hour.

and then there is a minor section of the Context which says:

The hou~~x~~se may or may not be one of a regular sequence of houses all numbered according to this pattern.

Now, the pattern, I think I'd better just insert something here which I haven't explained. No, I'll do it - the pattern in this case says: Two house signs each at about 45 degrees to the street facing up and down the street respectively, the house sign between 5 and 10 feet from the ground, as far forward on the lot as possible



in the extreme case on the lot line which separates the house from the street, and then referring to the two possibilities mentioned in the context = if the house is one of a regular sequence of houses all using this pattern the sign letter are at least 6" high, if the house is not ~~done~~ one of a regular sequence of houses all using this pattern, then the sign letters are at least 12" high.

Now, the problem statement in this case is quite long about  $2\frac{1}{2}$  pages. The exact wording of it is not important, but it contains a number of assertions each of which is an empirical assertion and those are important - that they be right. It reads as follows:

PROBLEM: House numbers are very hard to see from moving cars especially the driver.

Numbers are often too small to see from a distance. Many signs are often parallel to the road on the house face or garden gate so that they can't be seen from up the street. Furthermore, many signs are low enough to be obscured ~~to~~ by parked cars in front of them. Some signs are high enough to make the driver crane his neck forward. It is known that any object more than 10 degrees off the ~~driveway~~ driver's path makes it impossible to look at it while keeping his eyes on the road. ~~Now that that~~

Now to that - that is an empirical assertion and there is a reference to a paper R. L. Moore and Cristie research on Traffic Signs - Engineering for Traffic ~~Signs~~ Conference Road Research Lab. I do want to emphasise the idea that every empirical assertion that occurs in a problem statement should be backed up with evidence wherever possible.

With the present arrangement of house signs the following tendencies conflict:

1. The driver is trying to maintain a reasonable speed on the road - say 20 to 30 miles an hour, both to save time and so as not to inconvenience other cars behind him.
2. He is trying to identify the house without getting out of his car. Referring to at night it is almost necessary to actually step out of the car and go take a walk because the sign is so badly placed.



3. He's trying to see the number far enough ahead so that he can slow down without over shooting and if necessary turn into the drive way.

4. He's trying to keep his eyes on the road.

Now, under the present - it must be made clear that given all the various bad arrangements that I mentioned where the sign is too small, too far back, too low, parallel to the road. A conflict will be created among these tendencies and this is what leads to one to speak of a problem. We'll go into that in more detail later. The ~~xxx~~ proposed pattern resolves the conflicts among these facts and is derived as follows:

At 30 miles an hour under average road conditions the safe stopping distance is 245 feet. Now that figure is stated a little too exactly. Normally one would need to state a range. That again is referred to. There are empirical studies are referred to. Further it will take about 2 seconds to read the number or 88 feet at 30 miles an hour. The sign must therefore be legible 333 feet from the house - this is all a little over precise, that is something that we will have to discuss - because in a number of cases there is one number stated rather than a range of numbers - ~~xx~~ for 99% of all drivers to be able to read a number at 333 feet the numbers must be 12" high. There again, a paper is referred to this time British Journal of Psy\_\_\_\_\_.

Now, furthermore, so that these numbers are legible from either direction and from the front - not only when the car is 300 feet away but also for somebody just standing in front - if this is the street - the signs must be angled and in the problem statement here - say between 45 and 70 degrees. Now the pattern statement that I read out to you said categorically 45 degrees = another example of over precision but the difficulty here is that it's very very hard to establish what range will do the trick. It's fairly clear that a sign at right angles will not do it and one parallel to the road will not do it, for the reasons given.



Just exactly what range of angles is adequate is not clear, so this is pure guess work here. Even is the sign is large the driver may not see the sign until he is close to it. The sign must therefore be as close to the street as possible so as not to ~~x~~ violate the 10 degree limit from the drivers line of vision and that 10 degree limit plus the ~~position~~ characteristics of a normal windshield sets the limit - the 5' to 10' limit - on the ~~high~~ height. There again I want to point out whereas the stopping distance relationship to the size of the number was exactly computed, this 5 to 10 feet range is another one of these cases where it seems about right. Its fairly clear that 2' is too low and that 20' is too high, but just how to establish this permissable range of height - it would need to be done experimentally and it hasn't been - at least by me. It wouldn't be difficult to do, but it hasn't been done.

The last point - now referring to the variation in the context - at present houses containing this pattern are rare. And for that reason the 12" size for the number would be necessary - however, if it got to be the case that this pattern became ~~x~~ widely ~~x~~ accepted so that many houses began to have easily legible numbers, at that ~~xxx~~ point you would no longer need to see the sign that you were actually making for in order to start your deceleration. Because you would see a sequence of numbers and of course you could prepare to stop long before you actually saw the sign that you were actually going to. That is way, when the context statement contains that variable, it says if the house is one of a sequence of houses all similarly numbered. The size of the number could go down to 6". Now, there again although the 12" figure is exactly computed the 6" one is ~~x~~ more ~~xx~~ a matter of judgement. It seems clear that 2 or 3" would be too low and 12" unnecessarily high.

That whole statement is an example of a pattern. Now, I want to go back to the context and pattern statements and lets talk about those for a minute because



those two form a unit. And this is rather hard to sort out, the internal logic of this type of statement. As I said - on the one hand one has the sense that that is the proper logical sequence because in that context this problem arises and then one needs this pattern to solve the problem. There's an important sense though in which - you notice I haven't laid those out in order, but I've laid them out putting context next to pattern and putting problem here, and the reason for that is that these two form a spatial unit. The context statement ~~xx~~ essentially with appropriate identification of the parts - I'll talk about the sim\_\_\_\_\_ problem statement for a moment - the one where its not a sequence of houses - is talking about a particular relationship between these two parts - talking about a free standing house on a street with vehicles moving between 5 and 30 miles an hour. Then the pattern statement - this begins to get a little hard, obviously, in two dimensions - but just diagrammatically anyway for a minute - is asserting that there should be an object of that description in three-D would be that on the facade of the house there would be a projection - an angular projection - where the numbers would be. This is obviously not the only way of solving this problem, but its a conceivable one and ~~xx~~ because that thing would be the right height off the ground - it might be 8 or 9 feet.

So imagine that we're now talking in 3-dimensions here. The pattern statement becomes integral with the context statement so that the two together - the context and the pattern - are actually making an assertion about a number of parts which are to be related in a certain way and there is the guarantee that when the parts are related in that way - this problem will not occur. This will not be a difficulty. So that there are these two completely - different ways of looking at the logic of the thing. From the point of view of deriving it you look at the logic like this - once you've derived it and once you have the thing available to you, as an ~~xx~~ item in the language its really sometimes more helpful to view that as a unit and simply



to say if all of that is present the problem does not arise. ~~xxxxxxx~~ Which is the useful thing to know and of course the collalery if that is present without the elaboration of the pattern that will arise.

I want to make one very important point first of all - and that is the pattern must be stated in such a way that it has a great deal of variability built in. This is ~~xxxxx~~ extremely difficult to convey. I mean, this is very very difficult to convey in the stating of these things and ~~xx~~ the chief difficulty is this - although what is being stated is primarily spatial - it would therefore be best to convey by means of an image or diagram - images and diagrams tend to freeze even though they are of course spatial - while words can not be quite so directly referring to the ~~xx~~ geometry. Words are more open-ended and pictures and images and diagrams tend to freeze. For instance, this - the idea that this sign might be mounted on a projection from the fascia - if you show that as a drawing that will begin to convey a particular attitude and of course somebody could quickly object to that and say that this is not necessary that you have that. And they would be quite right. It is sometimes hard to realize just what an enormous variety of possible physical buildings can contain a pattern. In order to make this clear - I want to show a picture - after writing this pattern somebody pointed out to me that this pattern actually exists in hundreds and thousands of cases - there's a certain characteristic ~~xxx~~ building form in London which I'll show a picture of which quite surprised me because it is very very - it is transformed and sort of unexpected on the basis of what has been said here and what has been drawn.

Now, it happens that this is a traditional form of course it ~~x~~ contains the pattern precisely. Everything that is stated in pattern is true of this situation. They are on the lot line, of course the context is correct, oh, wait a minute - no as a matter of fact the free standing house, these things are not free standing, and I want to discuss that in a second, the house is standing on a street where there are ~~xxxxxxxx~~ vehicles moving at those speeds, the - as you can see these things are placed at 45 degrees to the line of travel on opposite columns you can just see the



other forty there, they are between five and ten feet from the ground, the letters are think in that case somewhere around 11 inches high; they - that's all isn't it. Right, there~~xxx~~ are a lot of them like that - so it would reduce the premissible height, slightly.

Now, an important kind of a thing is for instance it suddenly becomes clear obviously that these things do not have to be on the same object. Like when I drew that projection jutting out from the fascia, one gets the impression that this needs to be a triangular object. But in fact this fullfils the conditions of the pattern perfectly and they happen to be split. There's no reason why they shouldn't be. There're on a rounded surface of course which is - there's nothing in the pattern that says they shouldn't be and yet one doesn't think of that - your right - there's nothing mentioned about that in the pattern actually and there should be that's true. And these I think ~~xxxxx~~ are not very well dealt with on that ground either.

Now, let's get rid of this and start discussing. I wonder whether I should give one more example. No I won't give one now - I'll give one next time.

Now, I want to make clear that there are a number of mistakes or minor inaccuracies in what I just read out and that these minor inaccuracies are very very difficult to get rid of, but what to do with them is quite clear. For instance, the point was just brought up quite correctly that the pattern says nothing about night-time illumination - even though that's clearly apart of the problem. And this could be added into the statement - both to the problem and the pattern. ~~The~~ It might be possible to make it clearer in the statement of the pattern that these numbers could be on a curved surface so that it could be split. It might be possible to get more accurate about the size of the numbers in the case where one does begin to have sequences of similar houses. ~~Thxxxxxxx~~ That was not a mistake by the way, sorry.



The context that I read out said given a free standing house, on a street with vehicles moving at this kind of speed. Now, it is quite often the case that it is possible to generalize one of these patterns. That is, there may be a slightly larger variety of context within which the same problem occurs and the same pattern is appropriate. Now, this is not exactly a mistake, its a weakness, let's put it that way. This, and it is actually clear, that this pattern would actually be good for connected houses, it might even be good for a much larger variety of building types. And it would be worth trying to generalize the context statement, so as to include all cases where this pattern would be appropriate - that is to say where this pattern would arise in the form stated.

I want to convey very strongly the sense of integrity that exists in one of these pattern statements, in other words, I presented it to begin with as a kind of sequential thing where you state a context ~~and you find~~ then you find out - then you state a problem which occurs in that context, then you state a pattern which solves it. Of course, in practice it does not happen at all and one has these three elements and is jockeying them until they are all right with respect to each other. Just now we talked about enlarging the context statement slightly. There might be a new piece of information about given that set of context there's a slightly different phenomenon which goes on which would have to go into the problem statement. All these things are to be molded to each other and that is the sense in which this whole object is an integral unit and that is why it is to be considered the atomic element, for the language that we're creating.

Now, I think its probably time to have a discussion about this first example.

Question:

Reply: This is quite right and there are two possible attitudes you could take to it. One is that is what is said here holds for a slightly more restricted ~~a~~ range of context. In other words, in the lower density suburban areas, the streets are not regular enough and these kinds of things are not usual, so that the solution



you've talked about ~~wxxxx~~ would probably not be appropriate. It would be difficult to do but sometimes the street gets to be so long that you don't have a sort of obvious connection to that street corner sign which you can get in a city.

So ~~w~~ one way to handle it would be to say that - another way to handle it would be to make the context contain or not contain that element. Because if it did - supposing you say - no, let's supposing you want to keep that very very general - so you do want to be able to get into all the higher density cases as well - and any way your interested in that solution - what you then say that the pattern - first, of all there could be two alternatives one is ~~wxxxx~~ an arrangement of this kind without corner ~~x~~ case - without the thing you described - or if one is to use the corner case then there will be a minor modification of this possible. I would like to point out that it would not be a very great modification of it. Because even if one had the thing you described, all these problems would still arise they would be just less severe and it would actually be more like the case where the thing is in a sequence of houses. So probably the neatest way to get that whole thing in would be to rewrite the part of the context which talks about if the house is one of a sequence and instead ~~x~~ say if it is within a certain reasonable distance of a visible numbering system, and that would be a case and so would ~~wxxxx~~ other houses that are clearly numbered. Then you can reduce the size. Now, I think it must be made very very clear that these statements are always to some extent tentative, that is really crucial. These can never be dogmatic and they are always also - in the same spirit - they are in some cases hypothetical. That is, they are subject to criticism and modification by reasonable argument and I mean - well I think that's all that needs to be said, about what you pointed out.

Question:

Reply: No, because those conditions would not all be relevant to the particular problem in hand or to the particular pattern in hand. If one were trying to write



down literally all the conditions which which obtained in various cases you'd first of all you'd have to write down an infinity of them you wouldn't know where to stop, and the chance of generalizing the case would be gone. So the context only contains those items which are specifically relevant to the problem in hand and hence to the ---

Question:

Reply: No, that's what your saying. Let's try and stay within - you can call anything you like a problem, you can call the world population explosion the problem. I mean that, the moment you say that building this building is the problem - of course --

Question:

Reply: Now, your actually - what your saying is quite misleading on two counts. First of all, the context is a spatial thing - that is it is a - in this case it is the situation where a house is on a street - when you say - now see - there are a lot of aspatial things associated with the parts that are referred to - like the velocity of vehicles on the street and possible some other characteristics, I can't think of any to be relevant to this particular case. This is always permitted - there could be many many characteristics of a non-spatial kind associated with the parts. But your talking about what you call the context is not being clearly enough abstracted. I mean your just saying the context is the situation where the design has to be done, That of course is not something which you can generalize. The whole purpose here is that we're trying to construct an element which is going to have a reasonable sort of general validity. So we have to pick out precisely those things that are worth abstracting.

Question:

Reply: The context needsto be those conditions that are relevant to the occurrence of this problem, and therefore make it appropriate to inject this pattern. Now, you mentioned topography - what would be the relevance of that? And precisely what aspect of it would be relevant?



Suppose it does then what?

That's a little fantastic, because I mean - well, no in fact its not really possible, because the kind of rate of curvature of a hill that would be needed to really change the appropriate height of the sign is so great that no street on earth could ever have that rate of curvature. No even in San Francisco. I mean, I'm not trying to knock the idea of trying to find additional contextual elements which are relevant, I'm only saying you have to be very very sharp indeed about whether they ~~a~~ really are. What one has to do is to abstract the key elements of the context which are liable to be recurrent and crucial.

Question:

Reply: No, I'm saying fantastically little. You see we're back here now to the whole question of abstraction. In conventional architectural practice, the idea is that you have to deal with the building as a totality, and therefore the architect has gotten into the habit that if he ever uses the word context or thinks about it, are thinking of the entire realm of conditions as being the context and then he's thinking of his entire solution as being a solution to the problems that occur there. Now, we're trying to generalize things - we're trying to pick out elements of a language and that means we've got to be very - we've really got to concentrate on those features that are going to make these things useful. If we shove in like a million conditions which one could think of - your thinking ahead but why?

Question:

Reply: For this particular thing? Let's not talk about projects in general - let's talk about this pattern. No, no really important to the \_\_\_\_\_ because I suspect

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Something about a photograph of a particular tree.



No, your really misunderstanding one thing here I think. And that is that this context is meant to be a description of a situation which is so general that it might occur a ~~thousand~~ thousand times. Now, a photograph of a particular street is happening once - right - is that the call of the thing.

Question: Context is that in which the problem occurs

Reply: yes, this is very often the way that one thinks of these things - right actually that's a clearer way to make the point.

Question:

Reply: ~~xxxxx~~ True - but let's bear in mind as a kind of general principle that the more special that a pattern and I'm now using the word in the sense of the whole thing - the more special it is the rarer the context that ~~x~~ it refers to in the real world, the less useful its going to be. Let's get some things from back ---

Question:

Reply: Well, now I want to make two things clear here. First, there's nothing in this statement which excludes the statement which you've just made. It is perfectly possible to have patterns which are alternatives to one another. As concurrent members of the language. I think if one started to do what your talking about you would run into some quite severe - I'm now criticizing that particular suggestion not criticizing alternatives in general - that in that case one would run into rather serious questions of costs and feasibility and I will probably next time - lay down five ~~a~~ conditions - five empirical conditions which would make a pattern reasonable. All I've done so far is to lay out a kind of framework - of course you ~~xx~~ could state perfectly asinine patterns in this framework - such as ~~xx~~ given two cities separated by water less than 20 miles wide in order to - you see that would be the context lets say, one might say something about the populations of them - the problem might be communication between these and it is very easy to show there is a need for it - and then you could state that the pattern there be a fifty lane road connecting them. Now, there is something obviously wrong with that suggestion.



There is nothing in what I've said today that gives you any clear directive for

x refuting that ~~abxxxxxx~~ upserd pattern and we do need such directives.

I think that x when those directives are clearly stated you'll see that what you've just proposed the specific thing that you've proposed will probably fall by the way side. But of course its possible that there might be other solutions to this problem and I know what your getting at so that - so I've actually destroyed the point - there's another kind of solution possibley to paint the acutual numbers on the actual pavement. But that would still be dealing with the problem in essentially the same way. Your saying that there really might be a sort of quite - sort of flipper and there might be a really different way of dealing with the problem. I think is we could find a more plausible example of that it would be a good thing to x study because of course it could happen. Maybe you could work on it and actually try and do what you just did only do as to come up with something more plausible.

Question:

Reply: Well, now that raises different difficulties. No, I'm going to address my self to that because that's really crucial. That would be impossible, to do in a satisfactory manner. Of course an enormous part of this hinges on the question of what is an acceptable problem. Now, there's the whole philosophy of simply set up your goals and solve them and within that kind of philosophy what you've just proposed, namely drastically reducing speed limits in the residential areas would do it. Within the approach that we will take, we'll find that your not allowed just to state any goals and deal with them. And in this particular case for instance, since you can prove that there are cases were people would really be gugged to be driving at 10 mph distanc3s of more than a few hundred feet, that that in it self would constitute a problem x what you would have done there was to solve one problem by introducing another.



And as this is a very very delicate subject, I should make the - I mean what I'm going to do is - OK - today I've given you an example and ~~xx~~ defined the basic framework - next time I'm going to define the ~~xxxxxx~~ five conditions which ~~are~~ reasonable pattern has to meet - five empirical conditions - and I'm going to give a large number of examples all to do with house entrances so that we have those at our finger tips and then I'll give an example of a quite different scale ~~xx~~ to do with street patterns. And then, what we will be faced with for a large part of the lecture following that - is the quite ticklish problem of ~~xxxxxxxx~~ formulating this idea in such a way that we can all agree~~d~~ on it. Because - let me just make this point quickly - we introduce the idea of a memory, and we've agreed that something of that sort is necessary - now we can't have a memory unless we can all reach agreement about whether or not a problem is correctly stated - in order to do that we are going to all have to overcome the idea that a problem is merely based on objectives which are themselves determined by values ~~xxx~~ <sup>i</sup>peculiar to the data. We are going to have to find a way thru that maze - I'm not saying that clearly now we're going to devote a good deal of time to it. In other words it would not be sufficient merely to set up objectives of some kind and solve them in a way that you just proposed because on that basis anybody can set up his own objectives and ~~g~~ solve them in his own way. And the chances of receiving enough agreement to get this memory has absolutely ~~xx~~ vanished. ~~xxxx~~