Interview: Christopher Alexander!

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Five hundred years is a long time, and I don't expect that many of the people I talk to in these pages will be known in the year 2500; Christopher Alexander may be an exception.

Alexander is an architect whose goal is to completely change the practice of that profession. However, his ideas are so deep and useful that they have garnered attention in a seemingly unrelated field, computer science. His ideas are also important to management.

The first reason managers should read Alexander is that the design of workplaces has a major impact on the effectiveness of our organizations. The second reason is that his insights into the nature of order, as well as his methodologies, can be applied to the problem of managing organizations.

I'm privileged to present these ideas to you.

DC- To what extent is the design of office spaces important?

CA- The issue is a lot deeper than it might seem. The conventional way to talk about office space is to talk about efficiency criteria. Is this near that? Is this big enough? This sort of talk has its place, but it's really minor compared to what I want to talk about.

When you are working, the quality of your work depends on the extent to which you are able to put your spirit, your heart into it. It's not necessarily about being intellectual; it's just a question of staying very sharp, of doing what's really needed rather than something else. All this requires a genuine sense of well-being. It's not a problem of efficiency. It's a problem of whether overall—in motivation, in atmosphere, in congeniality—the well-being of the people working has been nurtured.

You can see from this very simple description that ninety percent of the workplaces in America couldn't possibly fulfill that prescription because they weren't thought about that way. The workplaces were talked about in quite different terms, in mechanical ways, that have very little to do with emotional, psychological, or intellectual well-being.

Do you agree with that? Does a typical workplace nurture well-being?

DC- I'd say the answer is no. The leading literature on this is the comic Dilbert which is about life in cubicles. Dilbert is popular because it reflects how unpleasant people find cubicle life. However, the belief is, "This is business. We're here to work not to have fun. So your job as a worker is to get on with it."

CA- Are you cartooning your own profession or do you believe that?

DC- Since I'm talking to you, you know I must be cartooning the profession. However, it is true that in a workplace there are many constraints on what you can actually do. You read about something really cool that Nickelodeon has done in their office space but you'll be thinking, "Well, we already have a building and

an office layout." So even to the extent that people believe that the physical working environment is important, they will be wondering what they can do about it.

CA- Let's just talk about some very basic things, for example, is it really ok for a person to own their workspace? Will a typical management organization allow people to create a place where they feel truly comfortable? In the sixties and seventies, there were even serious discussions if it was ok for people to put family photos on their desks. So the extent to which it's ok for someone to be at home in the office has been under dispute for the past three to five decades. And clearly, someone who is not allowed to be at home, in that very simple sense, is hardly going to be filled with a sense of well-being.

A garage mechanic in a small gas station has more freedom in this respect. Since it is a fairly ramshackle place, if they want to stick something up on the wall, as long as it's not actually interfering with their work, they can get away with it, whereas, in a corporate environment that's not the case. It's not that this is, in and of itself, an important point. What I am trying to demonstrate is that there is not a culture where it is presumed that to work well, you have to be well.

Do you agree?

DC- Definitely. And when you say it that way, no one is going to disagree with you, but when you look at how people spend their time, they invest very little thought or effort on workspaces.

CA- This is the problem. As you say, everyone will pay lip service to the concept, and say, "Yes, yes this is very important." But when you look at what is actually being done by a facilities manager in a particular place, you'll see that a culture where managers could feel comfortable initiating this sort of atmosphere of well-being has not yet developed. It would be considered very far out and extremely risky.

DC- There is quite a wide variation. The dot-coms were famous for trying to make workplaces fun. Then there are those other cases where the size of desk, the type of chair, and whether you have a plant or not, are all prescribed by the organization.

CA- Let me give you an example from a campus I built in Japan. It's a reasonably large area, about nine blocks, just outside Tokyo. It's a combination high school and college campus. In the early stages, I was working with the teachers to decide what would be done and what the atmosphere would be. I had private interviews with thirty or forty teachers, and I asked them to describe, as far as they could, their ideal work environment. I noticed a peculiar difficulty. People would say, "Well, I don't really know what you mean," humming and hawing and so on. And I would ask, "What is so difficult about describing your ideal workplace?" They responded, "Well, there are really no options, everyone knows what schools are like." And they'd describe a typical configuration of asphalt and regimented office-classroom buildings. They'd say, "Whatever we do, this is how it will end up, so there is no point answering the question."

So I said, "This is not the case here. We're quite determined to create the environment where you are able to be effective and where it really is what you want." I asked them to close their eyes and imagine for a moment the most ideal working environment. After I had worked at giving them permission to really say what was on their minds—which was no small task— people were saying, "I'd love to have a little stream with willow trees where I could walk along before I give my lecture because that would really put me in a constructive state of mind. It would be a wonderful place to work. But who is going to give us water and willow trees?" And the core of the campus we actually built is, indeed, a lake with trees around it. This was part of the pattern language we used to build the campus.

What I'm trying to illustrate is that the teachers themselves were almost unwilling to go out on a limb to tell me about what an adequate working environment would be, since it seemed, to them, so far out as to be a stupid thing to dwell on. This is a measure of how bad a situation we have.

DC- How do we go from what we have now, which nobody likes but we've learned to live with, to something which is truly effective.

CA- Let me give you a concrete example: the layout of an individual office for a middle level manager.

I'd ask a person to set up their ideal workspace. I'd give them a pattern language, which is actually a sequence of instructions, which says that in order to get the place you really want, there are some things you should think about first, and then there are some actions you should take; and then there are subsequent things to think about and actions to take, and so on. We have invited people to play with a model of the office. We give them models of chairs, desks and so on, which have the peculiar property of being expandable and collapsible. This allows the manager to adjust the dimensions of the furniture as they work with the model.

I then tell them to go through the pattern language sequence, and work the elements together to create an entirely comfortable working situation. This is a pretty simple instruction and in about twenty minutes, they come up with a unique configuration. If you take 20 or 30 managers and you take them through the process, the kinds of differences you get between configurations is absolutely astonishing.

Contrast that with typical modern offices. Although everybody says office furniture can be rearranged to individual wishes, that it is not true. Even though each desk comes in two or three different sizes, the variations are so limited that the attainable configurations are incredibly constrained, so much so that it's impossible for a manager to come up with something they really like.

DC- Yes, when you move into an office, you might take a desk which is against one wall and move it against another wall. It's not a great improvement but it's all you can think of given the constraints.

What's unusual in your process is that you are getting the manager to design their own space. You are not calling upon a design expert to come up with a beautiful and effective space.

CA- As you will have anticipated, I believe that these so-called experts, whether they are architects, furniture designers or interior designers, are quite authoritarian and usually extremely inexpert, mainly because they don't pay attention to what people really want. They maintain a continuous belief in their own powers of judgment over and above the judgment and wishes of the people they are meant to be serving.

I can give you an example of what I mean. I was laying out a series of apartments in Nagoya and I had a Japanese assistant, a very intelligent young woman, who trained as an architect and had studied with me. We would have the families lay out their apartments and she would re-draw them for technical reasons. She knew very well what I was after, and even as good as she was, she was continually of the opinion that she would somehow help the families by cleaning up what they had done.

In one example, I looked at the drawing the family had made, and compared it to her more technical drawing. I noticed that she had moved the sink a couple of feet from where the family had placed it. I asked her why and she said, "I'm quite sure they didn't intend it to be here, it looks awkward, so I moved it a little." But I sensed some intent in the original drawing, and I asked the lady why she had put the sink where she had. She explained something very complex and subtle about coming in the door, washing, purifying yourself, as you come

home and then relaxing. She had thought exactly where to put the sink and moving it two feet completely vitiated her design.

My assistant had moved it with the best intentions. Yet, the mismatch between the professional grasp of the situation and the so-called layman's grasp was like night and day. I'm not quite sure how we ever got to the almost obscene state where a professional believes that just by virtue of being a professional, they know more about someone's needs, feelings, and wishes than the person himself.

DC- And this is relevant to us to in HR, not only in how we develop workspaces that people will find effective, but also because there is an exact parallel with what we call the "technostructure". Organizations are full of experts telling people what they should be doing. And yet, when you study actual work practices, you find that the only way workers get things done is by ignoring what the experts tell them and by applying their own improvisations. Dr. Paul Duguid, who is also at Berkeley, has written about this.

CA – There is a profound lack of *trust* of the fact that what people want is actually the thing that should be done. Not only in the managerial situation you're describing but in so many walks of life.

DC- Getting back to the issue of designing an office. Even if we want to let people design their own spaces, is there anything we can do about the constraints of existing office furniture.

CA- Yes, it's fine to talk about using these models with expandable and contractible pieces of furniture but the issue is the ability to do it in the real world. At one point, I did a project with Hermann-Miller and found a way of providing a supply line that was flexible enough, and had such rapid turnaround, that it was possible to provide individual pieces of furniture to the scale required. This, of course, requires a completely different kind of production facility. We went very far towards this, and we designed a facility capable of doing this at low cost. Sadly, at the last minute, the production facility got cold feet because it altered so many aspects of their production cycle that it also altered the power structure in Hermann-Miller. It would have put the engineers in a stronger position than the chief designers, who were running Hermann-Miller at that time, because the designers are all geared to producing large numbers of very highly tooled products.

DC- This won't surprise HR professionals because although we often talk about change from a rational perspective, we also always look at it from the point of view of power structures.

CA- Yes, I've been told that these kinds of things are very common in organizations, rife in fact.

DC- You mentioned the term "a pattern language" a couple of times, perhaps you could explain what that is.

CA- Patterns are just a way of recording and encapsulating knowledge; they are reusable solutions. They are certain types of relationships which work in something that you know. For example, the coping on a brick or stone wall is there not just because it looks nice, which it sometimes does, but it also protects the wall from snow and rain. Over centuries, this evolved as the normal way to build a wall. The coping is a pattern. In our work, we were concerned with larger patterns, where people like to sit, patterns of light and so on. Back in the seventies, a group of people under my direction studied these patterns extensively and made a compendium of about 250 of these patterns in the book, *A Pattern Language*.

This concept of pattern languages has come into use in computer science. The concept gives insights into what kinds of patterns are useful in software development. Just recently, I heard from the Computer Scientists for Social Responsibility (http://www.cpsr.org/), who are planning a compendium of patterns about society, that is work, ethos, economics, old age, education, and so forth.

DC- The results of that pattern language will be of real interest to HR. What I find fascinating is that if I'm interested in making places better, I have the book, *A Pattern Language*, which can help me lay out a building, home or a workplace, but also there is the more abstract idea that pattern languages are ways to go about understanding reality. Instead of using some grand theory or model in a pattern language you have a whole series of elements that stand on their own and if you put them together in the right way, you can be pretty confident your solution will work just because these patterns have been proven to work well over time.

I know you've gone beyond patterns in your upcoming work, *The Nature of Order*, and are talking about process. Maybe you could tell me a little about that?

CA- Rather than a pattern language just being a compendium of good ideas, we believe patterns can be strung together to form generative sequences. This way one could actually create a design—of whatever was under consideration—by injecting one pattern at a time, each building on the product of the previous pattern. Our book, *A Pattern Language*, wasn't as strong as we would like in this respect. We didn't focus sufficiently on the generative aspect of patterns as ideas that could be used in sequences to produce things. In the intervening years, that issue is what has most occupied my time.

So patterns are now doing double duty. They are a repository of good ideas, but more importantly they become transformations which you apply to a given place and gradually unfold into a desired structure in this place.

If you are familiar with the theory of language, you'll see this is moving the pattern language much closer to a true language: a series of transformative systems that allow people to operate in their environment so as to make it effective and comfortable.

DC- What's interesting to us in HR is not just the idea that this is a methodology for helping to design places, but the whole idea that maybe the way to get things done in an organization of any kind is to have processes that build one upon the other, so that we will find our way to the end result. This is a very different way of thinking than, "We'll design something; we'll get the design right, and then just plop it down."

CA- That's a very important point. Would that concept be well-understood in your field?

DC- No, not really. There is something called "process consulting" which is well-understood. In process consulting, even though the consultant may know the answer right away, they take the client through the process of coming up with their own answer. In a sense, the process of generating client understanding is more important than the answer.

CA- You've put the emphasis there on participation, comprehension and ownership, but although I hold all those concepts very dear, there is an additional vital concept underlying my focus on process. In architecture, what's quite clear is that a living structure cannot be produced in any other way. It has to be generated indirectly because there's so much complexity. You cannot create a mouse by messing around with micro-tweezers and a blueprint. You can only create a mouse by having a fertilized egg turn into a mouse over a period of weeks, by splitting cells and differentiation, which will always produce a unique result.

The morphology of what is produced cannot be produced in other ways; it can only be produced by generative processes. This is quite true of buildings. If you don't generate the building indirectly, you will not get a living result.

DC- As an aside, did you know there is an argument in some circles that we can never create artificial intelligence because the

only way to produce intelligence is to have it evolve in an environment over millions of years. In other words, you can never design an intelligent organism or machine; you can only get there through some kind of evolutionary processes.

CA- That's possibly related, although we're talking about vastly different time frames. Creating a living building is of course a much smaller task than creating an intelligence.

DC- Another related idea is Henry Mintzberg's observation that some of the best strategies are not designed but emerge over time out of the organization. One could make the argument that emergence isn't just an alternative to design but perhaps it may be the only way to create all the alignments needed in a complex organization. Maybe you have to always evolve an answer rather than design an answer.

CA- When we talk about human organizations, there is no doubt they do evolve, and the success of the great ones, whether it's something small like a family or something large like an enduring corporation, is certainly not planned; it is the result of a series of very careful fine-tunings, day by day by day which lead to a structure that probably could not have been anticipated or planned or implemented from a plan.

I recently gave a lecture in Stanford at the computer science department where I estimated the order of mistakes that are inevitable if you do not follow an adaptive process, and we're talking thousands of mistakes in small things, 10 to some unimaginable exponent in large things.

So if you want to have something that is free of those mistakes, you have to follow a process which is capable of being an adaptive sequence. As you know from embryology, adaptive doesn't just mean tinkering, there's a certain unfolding, certain broad morphological structures that are established, and other things in the context of those and so on.

I would think it would be quite possible to work out some of the generative processes which would be needed to grow an organization successfully: what you do so that the organization unfolds smoothly towards a productive and well-ordered end-result—well, there is no end result, but any way to a good result that continues to evolve.

DC- And that is a fundamental mistake people in business make. We always talk about an "end result".

CA- That's the same in architecture. It's the main reason why architecture is so bad at the moment. People are always assuming that if they can draw it and have somebody build it, then that's it.

Nobel prize winner Ilya Prigogine has very eloquent passages about what it has taken to get physics from a static conception of the world to a dynamic conception. That is what his work has been about his own whole life. I quote Prigogine in *The Nature of Order* and I think he has influenced not just physics or physical chemistry but also biology; unfortunately, architecture is completely unaware of it. The main form of communication about buildings that have not yet been built is the artists' conceptions of the imagined end state. Those sketches do, in fact, carry enormous weight around boardroom tables but, of course, they are an absolutely impossible way to deal with reality and so produce the same dead garbage.

DC- Could you sketch out what a generative process in architecture might be like.

CA- Let's suppose we're going to put a house on a piece of land for a particular family. You go to the piece of land where the house is to be built and you make decisions one by one over a period of time. The key thing, and something that is frightening to quite a lot of architects, is that as you go forward in the process, you choose the decision points, such

that you do them at the right moment and you don't go back. You don't have this sense that the whole thing is constantly in play, as it is when an architect is sketching on a piece of yellow tracing paper constantly changing everything, moving everything. No adaptive sequence can be like that because it will never come to order. You have to do one thing at a time, so you have to know what you should do first, second, third and fourth because if you do not do it in the right order, it will not work. People are terrified of making decisions one by one like that.

Back to the concrete specifics. The first thing you decide is where you are going to put the house. We ask what volume will be harmonious with the topography, trees, neighboring structures and so on. Then, sketch the rough outline, and by sketching I mean, walking around on the land, waving ones hands, putting down sticks and stones. Once you have the rough idea of the volume of the building, we ask where we would like to be in that building, in regard to where we would spend most of our time, which is an answerable question at that point. That's how we decide where the main room will be. Again, it's done in the real situation, and about the same time you decide where the entrance is.

What an architect typically does is toss off one sketch of the whole, one after another, often showing them to the clients. Not only is there great arbitrariness to the process but also great confusion.

However in the process I'm talking about, you do not move forward until you have established each point to your satisfaction. You do your best to decide where the living room is but you don't try to sketch it at that point because you don't have enough information. You can place the living room successfully but you don't make any decisions that you don't really understand. You don't permit yourself to start drawing what the room might be like because you'd be making stuff up and you'd be making arbitrary, senseless, and not well-adapted decisions. In the state of affairs I'm talking about, at any moment, you only make decisions about those things that you can truthfully establish and rest upon, and then build upon and move forward to the next decision.

Going back to the embryology example, this is exactly what goes on in a developing embryo. The structure is laid down in the unfolding embryo and what takes place next is always in relation to what has been laid down. The structure that is laid down in the early stages is extremely fuzzy and only sets out the broad arrangement of things. The next bit of structure is injected into this and so on. This is a very different way of thinking about how to build something.

And this process follows through all the way to construction. In our company, we carry out construction in a similar way such that we can guarantee a price to a client but do not commit to a fixed blueprint. There is always flexibility because we know from experience that during construction, decisions need to be made, because almost every decision that you've made earlier, has to be modified or tweaked as you go further down the line.

DC- You draw on the field of embryology, and I think in the same way, managers will be able to draw on the concepts you have developed for architecture.

CA- I hope my own efforts will change architecture, and with the publication of *The Nature of Order*, these things will become clear in a way that can't be denied.

DC- Something you've commented on, which I'd like to explore, is that we've been taught that there are experts in things and we shouldn't take any action without consulting an expert. I'm not talking about the ignorant person versus the expert, but rather the person who has rich contextual information versus an expert dealing with abstract ideas. An everyday example is that when it comes to the opinion of a mother about the health of her child, versus the doctor's opinion, the mother's opinion is given no

weight, despite the fact that she knows infinitely more about the child.

CA- On the face of it is an astonishing situation, but we know it's true. It's one of the things I've put my voice against. It's so vitally important to go to the knowledge that all of us have. First, because people's lives are involved they need to be the captains of their own fates. Secondly, we need to put the decisions to the people who know more about the particular local circumstances rather than people who know less.

The deeper one goes into this, the more you see the solutions lie almost in an archetypal realm. There is some place in the human being where there's a great deal of knowledge that has bearing on many of these matters. One of the things I have tried to do over the years is call on that knowledge. So for instance, for the majority of people, when they pick up *A Pattern Language* they have a reaction something like, "Of course I always knew this but I didn't know I knew it. Meanwhile I've been pushed around by other sorts of concepts. I know this is true, I've always known this is true. How wonderful someone has written it down."

DC- And perhaps that's a good place to end. I certainly found *A Pattern Language* wonderful, and I greatly look forward to *The Nature of Order* which I can see is even more helpful and more profound.