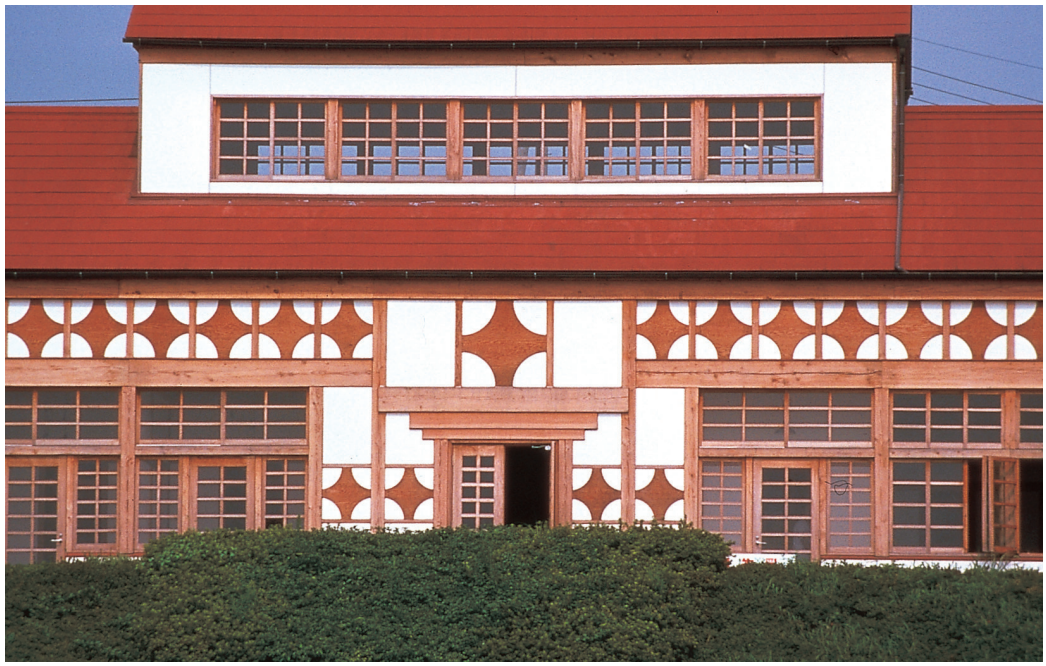


Structural frame of the Cafeteria building, Eishin campus. Christopher Alexander, Hajo Neis, Gary Black, 1985

What effect does the pattern of three-dimensional solid and void have on human life? It is only when surrounded, all around, by such living structure that we begin to feel ourselves whole. The reason why one feels sanctified in Chartres is that this structure around us, together with the space, are perfectly as one and thus relate themselves not only to the body, but even to the soul. Without this structural pattern, it is nearly impossible for deep living structure in a building to occur.

NOTES

1. In recent years all this has been considered unimportant. Buildings of the 20th century were often made to stand structurally by whatever means are possible, and the space within the building was then eked out for human use, from the left-over space.

2. See illustrations and discussion of structural design in James Johnson Sweeney and Jose Luis Sert, ANTONIO GAUDI (London: Architectural Press, 1960).

3. The interior of the main space is about 35 feet high. At the time we started we did not know how high it was going to be, only knew that it would end up between 25 and 50 feet high.

4. One of the most important pioneers in the development of finite element models was Professor Ed Wilson, Department of Engineering, University of California, Berkeley. Our own finite-element work was almost all done on Professor Wilson's published SAP programs, SAP-90 and so on, and benefited greatly from Professor Wilson's help.

5. My student and colleague, Gary Black, extended the technique and later made it into a teaching tool. See JOURNAL OF ARCHITECTURAL EDUCATION, 1995.

6. Gary, who provided engineering and technical assistance in the evolution of the curvilinear plant truss, gives an inaccurate account of the process I followed in "Design of Concrete Tracery Trusses to Define Architectural Space," JOURNAL OF ARCHITECTURAL ENGINEERING (1995, vol. 1, no. 1), 9–17.

7. For the principle that structure should create the social spaces in a building — hence be congruent with them, not independent — see A PATTERN LANGUAGE, STRUCTURE FOLLOWS SOCIAL SPACES, pages 940–45.

CHAPTER SEVEN

HOW LIVING PROCESS GENERATES

THE CHARACTER OF GARDENS

1 / THE PARTIAL, BUILT SHELL THAT LETS A GARDEN GROW

What is the effect of living process, used repeatedly, to shape exterior space? What kind of gardens may we expect to find in a living world?

Whether in public gardens, or in private gardens, the quality of exterior space which comes from living process has a particular and definable morphology. It is visible — for example — in this photograph of the bank of the Danube, at Esztergom in Hungary. Simple, and nearly crude, only the essentials are present. Nature dominates, but within a structure roughly made, by geometric centers of construction — concrete, stone — which supply the infrastructure that allows the plants, trees, bushes, water, to find their place.

That is the essence of all gardens and all agriculture: that built materials, human-made structures create a setting in which people, animals and plants can thrive. It is the geometry of these built structures, which, like the shell of a mollusc, makes the growing of the garden, and its resulting richness, possible.

The edge of the Danube canal, built in concrete, c. 1960; the trees planted about 1920. Public works Department, Esztergom, Hungary.

2 / A SEQUENCE OF ADAPTIVE ACTS

How does such a structure come into being? Look on page 232, at the garden where my friend and client Hisae Hosoi is walking. How did this garden get formed? Years ago, when I first saw the site, long before making a design for the campus, in the middle of the farmer's land, with vegetables and tea bushes, there stood a Kiri tree, a rare and old tree, with the most beautiful large purple flowers.

It was the most beautiful tree, the most beautiful thing on the site. From very early on I took that spot seriously; it was a major center in the land and became a major center in my thinking. It was reflected, later, as a crossing of four paths in the faculty gardens (See plan, page 232).

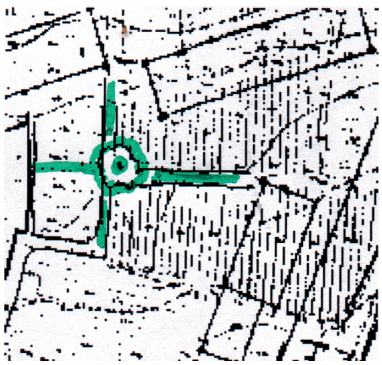
I urged Hosoi, during the land negotiation, on no account to let anyone touch that tree, to make sure it was preserved when the land parcels were assembled for the new campus. The school's realtor haggled with the farmers. Months went by.

One morning, long after we had made the campus plan, the school had bought the land, the tea bushes and vegetables still there — I went to the site. There was a vacuum there. I couldn't make out what was missing. I looked out over the fields, searching for what was wrong. Then suddenly I realized the Kiri tree was gone. I went to the place. There was nothing, nothing, not even a stump. Just a few handfuls of sawdust left in the mud.

I was in shock as if my legs had been cut. I went to Hosoi and found out that in Japan, a tree standing on a land is not — when considered as legal property — part of the land. When the land is bought, the tree is not bought, unless it

The place where the Kiri tree once stood: Gardens of the Eishin Campus, Christopher Alexander and Hisae Hosoi, 1985.

Hosoi walking in the garden towards the spot where the Kiri tree once stood.



Drawing of the garden. The Kiri tree is still visible on this early drawing, marked by the dot in the circle. Even though the tree is now gone, and was gone before we built the school, it still provides the focus of this path between the fences. The fences in the photo on page 231 point towards the place where the Kiri tree once stood.

is paid for separately. A Kiri tree has valuable, and much-prized wood. The school had not paid. The farmers had cut it down.

So I had to forget the tree and the centers it created in the plan. But by now, it was too late for me to forget the Kiri tree altogether. The trace of the tree was there in the position of the four gardens, the space, the location of the buildings, and the crossing of the paths. So the buildings, determined by the special center where the Kiri tree once had stood, were going to be built anyway. Some of the tea-bushes stayed as I directed, and the faculty garden stayed there, also where the Kiri tree had been. Fences were made, to mark the paths, where once the Kiri tree had stood.

What you see on this page, in the photograph, is Hosoi walking on one of those four paths. You see here the trace of a sequence of unfolding and structure-preserving transformations, even under painful circumstances. One thing had led to another. First the tree. Then the garden located. Then the buildings located. Then the tree cut down. Then the paths still oriented, even now, towards the place where once the tree had been.

. . . Then the rough fences, built to enclose the paths. . . and now Hosoi is walking there.

3 / THUS THE LIVING ASPECT OF GARDENS COMES ABOUT, NECESSARILY, AS A RESULT OF UNFOLDING IN TIME

If the fundamental process is working, a garden becomes a trace of the history of the land. We try to erect structure. The structure comes from the land. Part of the story may then be forgotten. But the unfolding goes on. Another trace is made. It continues to unfold day by day and year by year.

The form of the garden, and its living structure, come from that progressive unfolding — the position of one plant continuing and unfolding from the earlier growth of another. This living structure in a garden is very different from the kind of structure typically created by 20th-century landscape design or landscape architecture. It is a kind of wildness which exists in a semi-cultivated form, backed by built material, helped by structures that entice natural life into existence. It is a state of the world in which what happens is always, and continually, in contact with what *is*.

The plums dropping from the trees onto the paving stones, the plums rotting, swept away by water or eaten by birds. The path, a pleasant place for people to wander, to think, arm in arm.

How different this is from the developer's commercial "paradise." The clean paving stones, the perfectly manicured place, which will keep people's confidence up as they spend money; the place which never, ever, shows something out of place; the place which avoids ordinary things like plum trees because they have the nuisance of leaves and blossoms and plums dropping, and instead goes towards special high-tech plants chosen because they look natural yet need no maintenance, because they seem almost natural yet create no debris, need no birds to look after them, and give little sustenance to lovers strolling quietly arm in arm.

What I advocate, here, is based on structure-preserving processes. There is a latent center where the tree was so that latent center appears, in the new plan, as the crossing of four crossing paths. The rudimentary fences, made of diagonally tied bamboos, were placed after the paths, because they reinforce the structure which the paths created. Then bushes grow along those paths. Of course the bushes grow unevenly. But they, too, help to extend and preserve the structure.

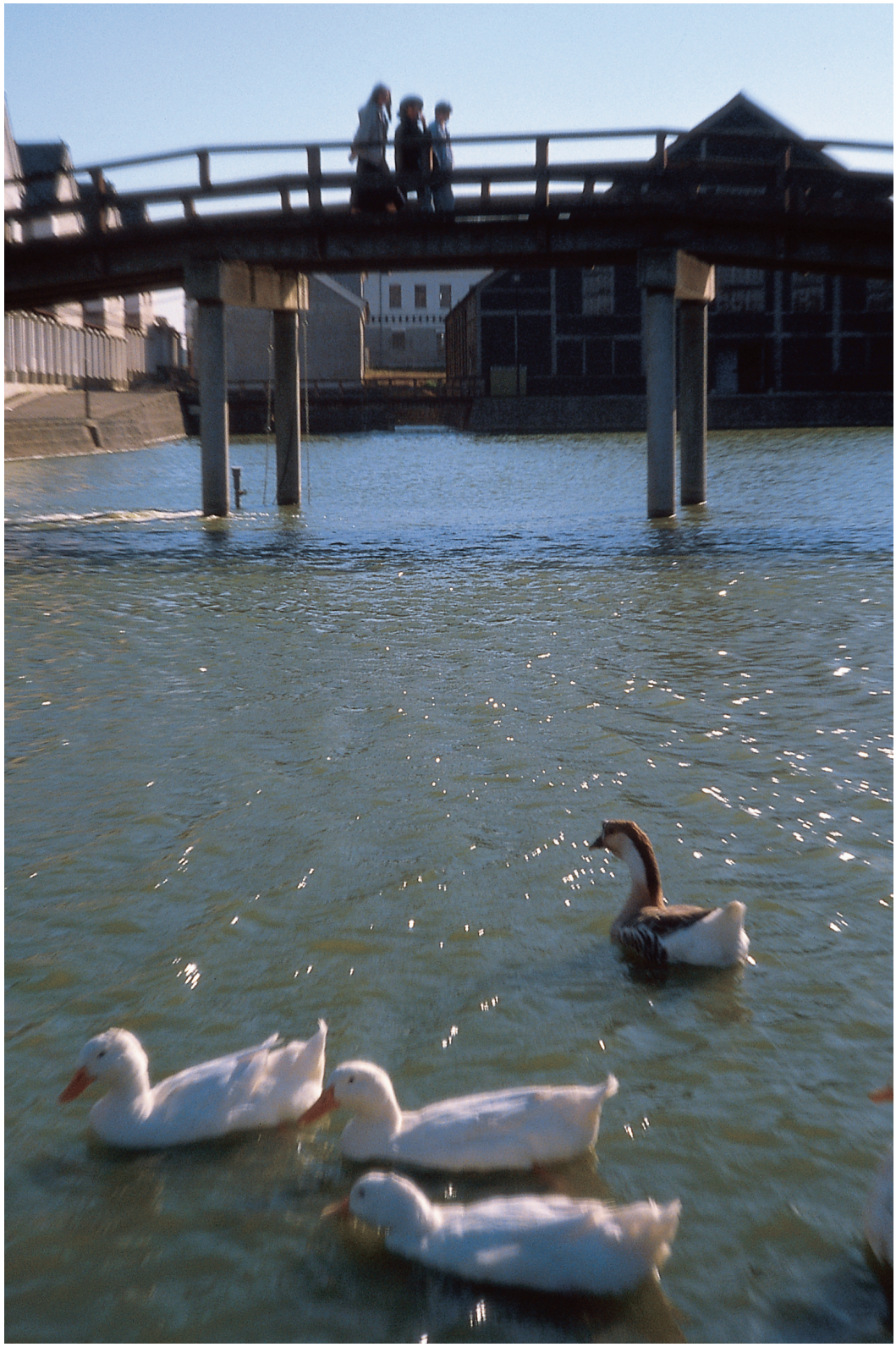
This unassuming, ordinary, touching quality can only be created by a living process, by unfolding. That means, by a process which allows plants, stones, water to exist, to occur, to develop and change in response to one another.

4 / IT UNFOLDS DIRECTLY FROM PEOPLE'S ORDINARY INSTINCTS

In the unfolding, the structure comes most easily from the *true* feeling of people themselves as they are living there.

This is one meaning of the fundamental process which is essential, and which has almost the greatest opportunity to flourish in the garden.

When we follow the fundamental process, we try to make, at each step, a real living center. This means we must concentrate on it, and put in a center which we feel something deep about, something we really care about. If this is done, we get a trace of this real feeling in every pothole of the place. Then there is nothing else, only this trace of real feeling, left in every center of the structure. The structure begins to have a meaning!



The lake and bridge at Eishin Campus. Ducks brought to the lake by teachers and staff of the school. Christopher Alexander, Hajo Neis and others, 1985.

I remember so well when we finished the Eishin project, and Hosoi wrote to me, at once, about the ducks the school staff had got to put on the lake. On the day the school opened, the members of Eishin school bought ten ducks and put them on the lake. They did this without being asked, entirely on their own. It showed, I thought, how far the this place was theirs, already. The staff treated the school the same way that one treats ones own garden or one's own farm. A few days later, I had this letter from Hosoi.

April 1985.

Dear Chris,

Please enjoy one good information. I forgot to tell you it on the phone.

Three days ago, I experienced a wonderful night view from the lake-side near the bridge at night. The lighted gym, homeroom buildings, arcade, the administration building were reflected on the water. It was an indescribable one. It was much more beautiful than I expected.

More than that, ten ducks have started swimming in the lake very gracefully. Mr. Kojima got them four days ago. It shows how deeply they appreciated and started enjoying this lake.

I'm very much pleased to confirm the very important meaning of the lake by these matters.

The lake has started breathing. Let's enjoy it tomorrow together.

Hosoi

The school staff put the ducks on the pond because the lake made them feel something. They responded with something of their own feeling. The feeling fills the place, they are not just "ducks." That place now has *their* feeling filling it.

If you do one thing at a time — just a true thing that comes from a carefully considered feeling — that means, when you do it, your own feeling is enormously increased, and you choose it because of that, and you put it there because of that . . . then something real, ordinary real life, will come into being there.

Living process in a garden depends on people following their own hearts, allowing the call of their own hearts, dreams, feeling, to become actual in that place.

Students enjoying the Eishin gardens in the rain. After the ducks and other touches were brought in (or made) by different people from the school, it seemed to become very easy and very natural for students to be comfortable, at ease with themselves.

5 / A COMMENT FROM THE HEART OF ZEN

Mr. Murakoshi's back garden on the Eishin campus: pots, seedlings, columns, bushes, the harmony of everyday life.

So, in gardens, we come close to the heart of zen, to the contact with life which shows it to us as orderly and uncontrollable, wild and cultivated, dispassionate and unkempt.

In the greatest buildings, and in the greatest art, this quality may also be expressed. But it is in gardens, above all, that most of us have an opportunity to express it at an ordinary level, to try it, practice it, see it in the life of the world around us, and to bring our own nature — so easily sent off the rails by an unbalanced position — into harmony with natural things.

It needs formality as a backdrop. But within formality it needs a kind of freedom, not to make things up-tight — so that they are regular, ordered, and yet open to the wild grass and the falling leaves and the blowing irises.

6 / THE BUILT SUPPORT THAT NATURAL GARDENS NEED

The example of the ducks shows something essential. The feeling of the people in the campus came forward in response to a structure of centers which we built, and we put there. Perhaps it sounds funny to say it, but they could not put ducks on the lake until we *built* the lake.

It is my belief that a garden is a *structure* — not very different from a building. It is a built structure which creates and contains living centers. That built structure is made of steps, terraces, walls, low walls, high walls, fences, paths, slopes, and bridges. It may include trellises, rails,

A garden in Teheran, built by my student from long ago, Kamran Safmanesh, 1989.

nails in a brick wall with strings. It will, almost always, include seats, pots, benches, even rooms — places that invite use.

So, to create a garden by the fundamental process, means finding a piece of land, then building an extension of the buildings which extends into and covers the land.

Of course this built structure outdoors is much lower intensity (as a building) than the building itself. It costs perhaps a twentieth as much per square foot, a tenth, occasionally a fifth. But still, it needs to be understood as an extension of the building, which extends out into the land, and is a built thing, a built structure.

In my experience the cost of this exterior structure must be included in the price of the building — or subtracted from it. So if we are asked to build a building for $100 we answer, Right, the building itself will cost $80, the part of the building which extends out into the land around the building will cost $20. This means squeezing the cost of the building to 4/5 of what you thought. But the $20 which is then spent on the land creates living structure in an area many

WEST DEAN VISITORS CENTRE

PRELIMINARY ESTIMATE, BEFORE DESIGN FEBRUARY 199

THIS ESTIMATE BASED ON THE ROUGH CURRENT PLANS AFTER DISCUSSION WITH SIMON WA
AND JIM BUCKLAND, AND INCLUDING NEW AREAS FOR KITCHEN, SHOP, TICKETING FACILITII
CURRENT ESTIMATE OF BUILDING ON CURRENT ROUGH PLANS

COST OF BUILDING	£269,519.13
COST OF EXTERIOR WORKS	£45,786.47

PARAMETERS DETERMINING QUANTITIES

DEFINED PARAMETERS			
Main Bldg Floor Area	174	m2	
Kitchen Floor Area	36	m2	
Shop Floor Area	60	m2	
Exterior Terrace Areas	90	m2	towards the river
Main Building Wall Height	3.6	m1	height to eave
Outbuilding Wall Height	2.2	m1	height to eave
Garden Wall Length	60	m1	low sitting wall
DERIVED PARAMETERS			
Total Roof Area	324	m2	horizontal area is 1.2 times floor area
Exterior Wall Length	57.40	m1	4.2 times square root of area
Low Exterior Wall	46.00	m1	
Balustrade Perimeter	25.61	m1	2.7 times square root of terrace area
Windows	35	#	average window 1 m2
Doors	9	#	
Interior Wall Length	51.70	m1	half exterior wall length
Interior Wall Surface	680.08	m2	exterior plus twice
Toilets	8	#	
Porch Area	4.00	m2	

BUILDING DESCRIPTION

Brick wall, mixed with flint. Red flat roof tiles, on large deep roof
Extensive terrace and balustrades, garden walls, and roofed porch
Roof oriole as ornament in center of main roof
Ornamented ceilings, wood windows, tile or hardwood floors
Interior truss-work visible, window seats, alcoves and interior furnishings

UK CONSTRUCTION COSTS All costs in pounds sterling

Costs include material and labor, 15% contingency, 20% management, not VAT"

	UN	QTY	£/UNIT	EXTN	CONT	MGMT		TOTAL
DEMOLITION/PREP		TOTAL COST				£5,400		
	Allow	1	4,000.00	4,000	600	800		5,400
EXCAVATION		TOTAL COST				£2,675		
Excavation	m^3	134	7.00	938	140	187		1,266
Place Crushed Rock	m^3	52	20.00	1,044				1,409
FOUNDATIONS		TOTAL COST				£17,340		
Concrete	m^3	77	80.00	6,124	919	1,225		8,268
Screed	m^2	270	12.00	3,240	486	648		4,374
Underfloor Heating	m^2	174	20.00	3,480				4,698
EXTERIOR WALLS		TOTAL COST				£41,583		
Exterior Brick Leaf	m^2	273	90.00	24,555	3,683	4,911		33,150
Interior Leaf (Block)	m^2	273	16.00	4,365	655			5,893
Dpc	m^1	103	5.00	517	77	103		698
Insulation	m^2	273	5.00	1,364	204	273		1,842
INTERIOR WALLS		TOTAL COST				£4,020		
4 Inch Block Walls	m^2	186	16.00	2,977	447			4,020
Stud Walls	m^2			0	0.00	0.00	0.00	
ROOF STRUCTURE		TOTAL COST				£50,107		
Main Trusses	#	8	400.00	3,200	480	640		4,320
Timber Roof Structure	m^2	324	10.00	3,240				4,374
Tile roof Surface	m^2	454	50.00	22,680	3,402	4,536		30,618
Eave Work	m^1	124	30.00	3,722	558	744		5,025
Gutters & Dwnspouts	m^1	103	10.00	1,034				1,396
Flashing	m^1	324	5.00	1,620	243	324		2,187
Insulation	m2	324	5.00	1,620	243	324		2,187

Early cost plan for West Dean Visitors Centre, Sheet One

ROOF ORIOLE		TOTAL COST	0.00					
Structure	allow	0	2,000.00	0.00	0.00	0.00		
Windows	#	0	300.00	0.00	0.00	0.00	0.00	
Ornament	#	0	2,000.00	0.00	0.00	0.00		
INTERIOR FINISHES		TOTAL COST			£44,479			
Stone Floors	m2	174	40.00	6,960	1,044	1,392		9,396
Hardwood Floor	m2	96	30.00	2,880		430		3,880
Wall Plaster	m2	680	8.00	5,440	816	1,089		7,345
Skirting	m1	161	8.00	1,286	193	257		1,737
Door & Window Trim	#	44	20.00	880		132		1,188
Ceilings	m2	174	50.00	8,700	1,305	1,740		11,745
Painting	m2	680	10.00	6,800	1,020	1,360		9,181
BUILT-INS		TOTAL COST			£51,975			
Upholstered Lobby Seats	m1	11	400.00	4,400	5,940.00			
Shelves	m1	6	200.00	1,100	165	220		1,485
Alcoves	#	4	500.00	2,000	300	400		2,700
Ticket Counters	#	2	1,000	2,000				2,700
Built In Seats	#	30	500.00	15,000	2,250	3,000		20,250
Glass Display Cases	#	7	1,000.	7,000	1,050	1,400		9,450
Tables	#	15	400.00	6,000	900	1,200		8,100
Serving Counter	#	1	1,000	1,000	150	200		1,350
WINDOWS AND DOORS		TOTAL COST			£27,202			
Wood Windows	#	35	400.00	14,000	2,100	2,800		18,900
Exterior Doors	#	8	600.00	4,800				6,480
Interior Doors	#	5	300.00	1,350				1,822
ELECTRICAL		TOTAL COST			£10,100			
Allow	m2	174	33.00	5,742	861	1,148		7,751
Light Fixtures	#	34.8	50.00	1,740				2,349
PLUMBING		TOTAL COST			£12,744			
Toilets	#	8	680.00	5,440	816	1,088		7,344
Kitchen	#	1	4,000.00	4,000				5,400
HEATING SYSTEM		TOTAL COST			£7,290			
Heat Exchange & Pumps	m2	270	20.00	5,400	810	1,080		7,290
Ducts			0.00	0.00	0.00	0.00		
Outlets						0.00	0.00	0.00
SITE SERVICES		TOTAL COST			£10,800			
Water	allow	1	1,000.00	1,000	150	200		1,350
Boiler Feed	allow	1	2,000.00	2,000	300	400		2,700
Electrical	allow	1	2,000.00	2,000	300	400		2,700
Sewer	allow	1	3,000.00	3,000	450	600		4,050
EXTERIOR LANDSCAPE		TOTAL COST			£19,440			
Gravel Paths	m2	60	10.00	600.00	90.00			
Exterior Steps	#	10	100.00	1,000	150	200		"1,350
Low Garden Walls	m1	60	70.00	4,200				"5,670
Brick Gateways	#	1	300.00	300	45	60		405
Planting	allow	1	5,000.00	5,000	750	1,000		6,750
Rainwater	allow	1	1,500.00	1,500				2,025
Exterior Lights	#	12	150.00	1,800				2,430
TERRACE		TOTAL COST			£13,386			
Earthwork	m3	45	20.00	900	135	180		1,215
Terrace Retaining Walls	m1	26	70.00	1,793	269	358		2,420
Flagstones (concrete)	m2	90	10.00	900	145	180		1,215
Ornaments	#	6	200.00	1,200	180	240		1,620
Balustrade	m1	26	200.00	5,123	768	1,025		6,916
ENTRANCE PORCH		TOTAL COST			£2,160			
Columns	#	2	500.00	1,000	150	200		1,350
Roof	m2	4	100	400	60	80		540
Benches	m1	2	100	200	30.00	40.00		270
Balustrade	m1	0	200.00	0.00	0.00	0.00		
BUILDING COST					£269,519			
EXTERIOR WORK COST					£45,786			
TOTAL PROJECT COST					£315,305			

Early cost plan for West Dean Visitors Centre, Sheet Two

times larger than the building alone. It has an enormous effect, multiplies the usefulness of the building many times. And, of course, it connects it to the other buildings near by.

I have found that people are nearly always short-sighted and want to economize on this 20%. When the going gets tough, and money becomes a problem, the red pencil comes out, and people say, let's do this later. We must have doorknobs, shelves, brass fittings, a second bathroom — we will spend the money for the garden later.

I always resist it when my clients say this to me. You have to resist it, over the wishes of the client even, because our responsibility is for the whole not for the building alone, which is a fragment of the whole. The exterior structure is as vital a part of the structure of the whole, as the building. It happens to be a little cheaper than the building cost, 20% v. 80%. But you can not forget it, or reduce it, without severely damaging the whole. This exterior structure is what brings life to the world. If this 20% is robbed from the budget, the thing will die. It is much easier to put extra bathrooms, expensive floor materials, brass fittings and so on, at a later stage. Build the building for 80%, the garden for 20%, and then the living world will start to breathe. Otherwise it will never work.

On pages 238–39 I show the preliminary calculations from our West Dean Visitor's Centre in England. This budget was made before I designed the building, just from my initial impression of the site, the size of the building, and what I thought would need to be done to be fitting to that place. As you see, even at that early stage, 17% of the budget was allocated for *exterior structures*: terraces, walls, arches, ornaments, gates, posts. That is because from the beginning, the outdoor structure of the building, its connection with the earth and with the land, going out into the land around, were all considered an essential part of the building. It is unusual to spend this much money on these things. Yet it is *because* the money was allocated this way — and because the allocation persisted with those percentages right until the end of construction — that the building now works so well, people have a good time there.

7 / TWENTY PERCENT OF THE CONSTRUCTION MONEY FOR OUTDOOR STRUCTURES

I would like to explain how I use money in a building project, whether it is a building or a garden or a huge complex. At the very outset, usually from the first day of the commission, or even the first day of preliminary discussion, before there is a contract, when I only have the sketchiest idea of what the building might be like, I already begin making calculations to see what is possible with the available money, what is the best way to spend the money.

I do this because so many details come out wrong. The balance of structure cost, size of rooms, beauty of windows, extent of construction in the outdoors around the house. All these things have an effect. If one leaves them all until the design is finished, then you end up stripping everything away, and what is left is just a bare shell — a cardboard box of the cheapest construction, with nothing but the plan left that one might call "architecture."

So instead, I try, from the start, to balance things out, and to provide them according to their importance. Thus, for instance, in the early cost plan for West Dean on pages 238–39, you see right away that windows are in there for a big number — almost a full 10% of the building budget. Molded plaster ceiling and ornament is in there: 6% of the budget. The terraces, even with garden ornaments, are there at 17% of the budget. It was my judgment at that early stage that terraces and

Terrace of the Sala House, Berkeley, California. Christopher Alexander, 1983

garden works were needed, at that cost, in order to make the project a balanced whole. Before even knowing the design, I put in a provision for 60 feet of outdoor concrete benches, for 1000 square feet of terrace, 50 feet of brick walls, 4 gates, garden ornaments on the stonework.

This last may sound trivial. But there is an item of £2000 for the garden ornaments. I knew nothing of what we would do, nor how we would make them — not even what they would be made of (though I assumed some permanent masonry material).

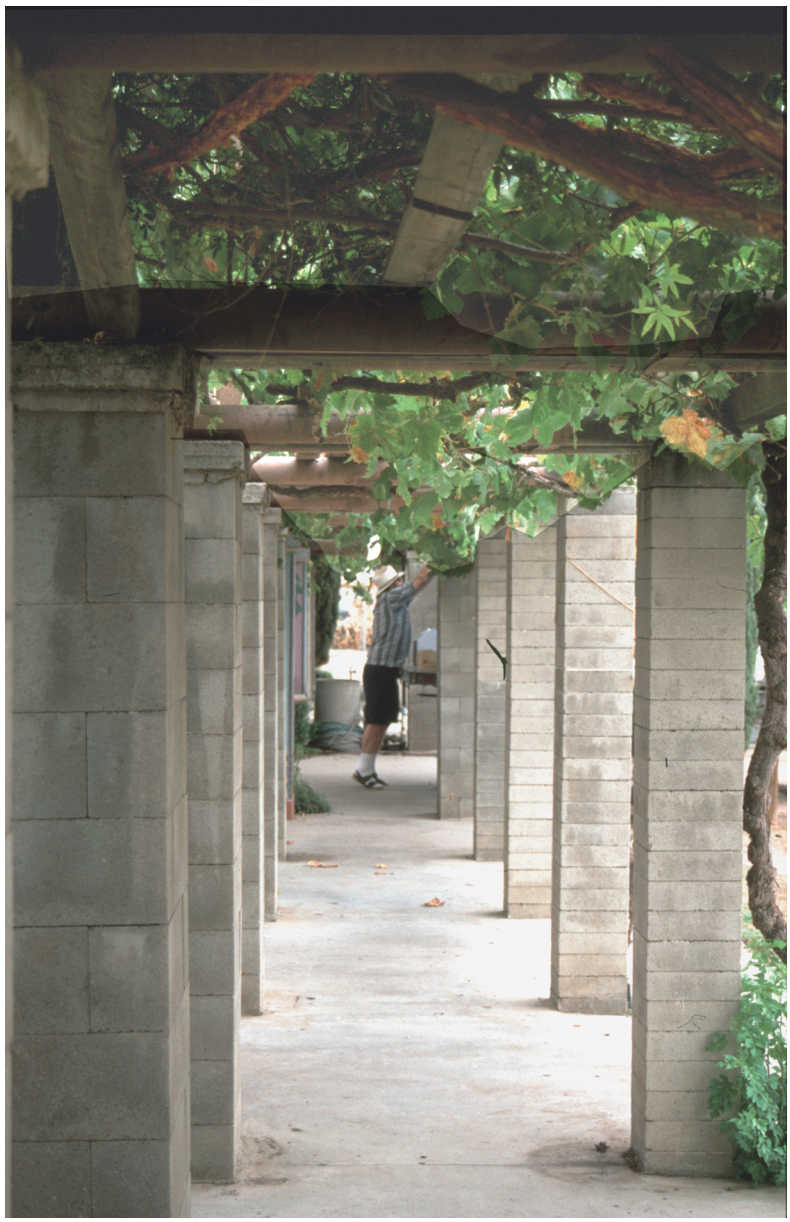
Yet in the end it is the cast concrete spheres which add a finishing touch to the building (page 245). And their cost was not far off what I allocated on this day, two years earlier, without even knowing — in detail — what I was doing. I knew that some money would be needed for such a thing, and made provision for this money in my calculations from the very earliest moment in the process.

Going back to gardens: In all our building projects, virtually without exception, I have made a practice of spending money for walks, terraces, colonnades, low walls, retaining walls, small bridges and so on.

Most of this stuff is expensive. But you *have* to spend the money!

It does not have to be fancy. It is not intended to create an "effect." It is merely intended to establish, truly establish, those centers which allow living structure to increase.

For instance, the long curving seat made of brick and flint and block and poured concrete (illustrated on page 245, from the entrance to



Positive space: A back aisle of the farmer's market in Fresno. Concrete blocks, columns, vines, in early morning before the market opens, while farmers set up their stands. Christopher Alexander, Carl Lindberg, Richard Erganian.

the West Dean Visitor's Centre) does something of that kind. It gently organizes the space, so that the garden, and the gardener, feel inspired for things to grow.

We were really scraping the money together at the end of that project, with what we had saved from other construction operations, and the client was unhappy that we spent it like this, not on something else. But the effect was to create positive space between the entrance gate and the main entrance of the building. It gives people a natural place to sit. It encourages growth of plants, grass, all around it, in natural ways.

The same is true of bushes, wisteria, trees, lawns, masses of rose climbing on the shed out by the back fence.

8 / POSITIVE SPACE IN GARDENS

If we ask how to build these structures, how to arrange them, where to place them, my answer is simple. Always, you are trying to make positive space.

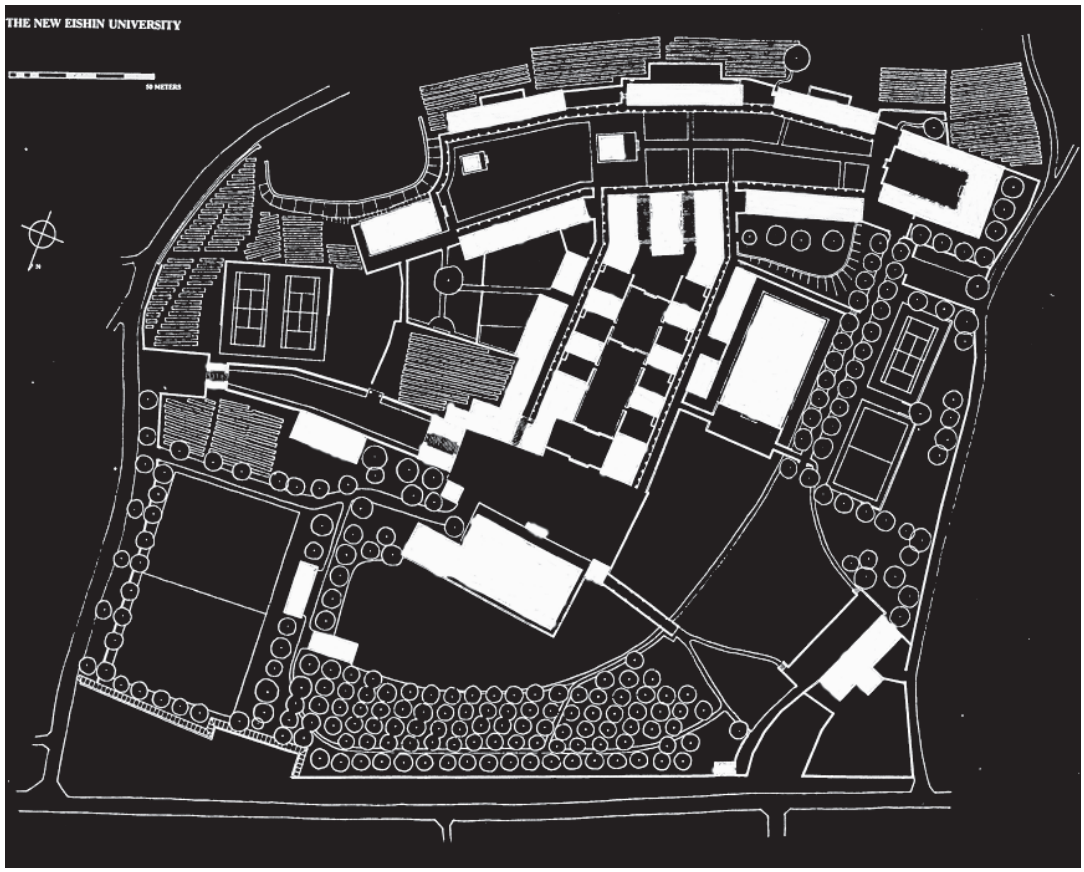
To treat the gardens as positive — more positive, even, than the buildings themselves — that is the first step. Each part must be composed of positive centers. And to achieve that, each of these centers which is achieved, must itself be made of positive centers, smaller centers. It is these second-level centers that are created by the structures which we build.

So we place buildings, to form positive space in the garden and outdoor areas. See, for example, the positive space shown in the plan of the Eishin campus, on page 244. Then we build structures in these outdoor areas, to differentiate them further, into smaller living centers, animated by the structures — steps, walls, parapets, railings, seats, embankments, bridges, slopes . . . that we build in them. And then we allow natural life to rip loose, the plants, the grass, the trees, the bushes — and let these form still further centers, which then animate the positive space even further. That will happen almost of its own accord, if the initial positive space has been correctly made. This is the form the living process takes, in making a garden.

9 / PRESERVE THE STRUCTURE OF WHAT IS THERE

The newly created centers — the new positive spaces — work best, if they are based on some thing, some trace, that is there already. This is the key of the fundamental process anyway, that

At the heart of the students' festivals today: the lake. This lake started out in life as a muddy swamp in the tea fields, before we built the campus. I saw, then, it was virtually impossible to drain it, and so made it a lake. The latent structure that was there was thus preserved, and extended, and enhanced — and became the living structure we see there today.



A black white reversal of the plan of the Eishin campus. You see, here, how each part of the garden (each piece that is black on the drawing) is a positive space. Each part, by unfolding, has arisen to become a positive center.

it embellishes the centers which are *there*. So we look for the most significant deep centers in the land, in the trees, in the flowers, in the views, and try to keep them intact, enlarged, intensified.

Leave them, and build hard structures which support them. What we build, may be formal, a structure of symmetries, that will support the natural land. That is what happens in the lovely English laburnam walk on page 247. You keep what you can. You keep the tea bushes which are natural, you keep the bougainvillea in the Fort Lauderdale slum. That bougainvillea must stay, and the buildings must then be built around it.

10 / SMALL AND LARGE CENTERS CONTRIBUTE TO UNFOLDING

Oddly, the wildness of an unfolded garden does not become most natural without support.

It becomes most vivid, when supported by a delicate system of small walls, edges, terraces, trellised structure, small retaining walls, sheds, which refer to centers that are in the land and have been formed by structures built before — so that the most natural life can then emerge.

The gardens at West Dean, ten years after the first cost plan and conception. The ornaments planned for in the original cost plan — made long before I had the faintest idea what they might become — are now playing their role.

The entrance seat at West Dean, leading the visitors in. Christopher Alexander and John Hewitt, 1995

In the slums of Fort Lauderdale, Bougeanvillea bush in the Progresso neighborhood of Fort Lauderdale; an ordinary bush, in a near-slum neighborhood, yet lovely, and inspiring for houses for blocks around.

The loosely, carefully made centers are the core of our architectural work in the outdoor world because they loosen, let loose, what is seeking to happen there, as if of its own accord.

The classic English or Italian garden has this wildness too, and yet is full of centers carefully arranged in their structure just as I have described. Just so a classic Japanese garden, each rock, bush, stream placed, and yet the whole thing has an un-managed quality that makes us feel almost as we do in nature at its wildest.

In the gardens of Eishin the fences, hedges, paths are placed with very great care, and yet they are not manicured. They grow wildly, so we see the centers created by path, fence, fence post, climbing tendrils.

Our Farmer's Market in Fresno (page 242 and pages 538-39) is an elegant structure of arched, bent beams, roughly and cheaply made. It creates a large center at its core, a huge space used by the farmers on the weekends; each column is placed to be a strong center because the column- though cheap concrete block — is short, stubby, well shaped, a place to lean against, with a water spigot for watering the vines in the heat. The vines themselves grow in a riot overhead.

The bougainvillea in the Fort Lauderdale slum (this page) is largely untended, lush in its own profusion of growth, because it is on a good bit of soil, in full sun, and is not trimmed back, it has grown to enormous size with color that fulfills the neighborhood.

The small swelling terrace at the Sala house (page 241) creates a step out into the air of the hillside, enlarges that place, makes a formal curve which hits us just where we want to be when we stop in that garden: it is pure pleasure, then carried out in detail with bench, bench back, lawn, and climbing plants. The curved bench back made of segmented sloping sections, was not very easy to make; I built the structure myself for our clients. But a few extra hours of fiddling about with

Laburnams at Bodnant, England

complicated angles on the formwork were what was needed to make it whole, and to give the bench it this pregnant bulge, which now sits in the land solidly—a place where people really like to go. Its centeredness is massively in the geometry.

11 / CENTERS IN YOUR OWN GARDEN, CREATED BY YOUR DESIRE

On page 250 there is an example from a garden in Holland, part of a painter's house. She plants just what she feels like, with the intensity of placing only what she wants, where she wants it; perhaps as a painter she has a special courage to do exactly what she feels.

As a result, we find in one part of the garden an intense luxuriant color, dark reds, bright yellow, small patches of intense blue. This is quite formal, the center of each color, very carefully placed.

In another part of the garden, an old orchard, sheets and laundry is flapping; an old iron table stands under a tree, and apples are laying on the ground. Again, the table, the sheets, the clothes line, the apples on the ground even, all just where desire places them.

In your own garden, too, the fundamental process has an enormous role, and true unfolding is possible, as it emerges from the combination of your feeling for the land, and your egoless imagination.

Hot and cold tubs overlooking vineyards of the California hills, hand-ground colored marble dust, Sonoma, California. Christopher Alexander, Eleni Coromvli and Mark Briner, 1985

Garden around the Sarlo hot tubs, Sonoma, California. Christopher Alexander, Mark Briner, Eleni Coromvli, 1985

The garden of the Sala house, outside the kitchen. Berkeley, California. Christopher Alexander, Gary Black and other members of CES, with Andre and Anna Sala, 1983

A garden with real life comes from thinking in living terms about every plant, every path, every bush, the fertilizer, the water, every little wall. To get it right (of course, this is like everything else), it has to be made gradually, each bit adapted to the others, each plant given the place and sunshine, shade that it likes best; each bit of grass protected; any trickle of running water, if it occurs, helping plants to grow.

This is something which nearly everyone can have a hand in. At one time or another in our lives, most of us do some kind of work in a garden. Gardens are therefore the easiest part of the world to influence; the most accessible of the parts of the world where unfolding with true life can be made to occur — really, by almost anyone.

The most wonderful thing about your garden is that you can do almost anything you want there. In my picture of the world, these gardens, thousands of them, reflect not only the beauty of nature, flowers, vegetables, trees. They reflect, too, our own heart's desire, a place where we may see the individuality and love of different people expressed in the most ordinary way, a million-fold. It is the least constrained part of our environment, the place where each of us is most free to do what we want. So we can express ourselves; we can have our heart's desire; we really can do what we WANT to do.

12 / THE WILD AND CULTIVATED GARDEN

Dutch painter's garden in Betuwe region, Holland, 1997

To get the wild true garden by unfolding, all we have to do, really, is what every good gardener does. Like a painter placing one color at a time, most carefully, giving each precious drop of color

its life, we must pay attention to each place, flower by flower, bush by bush, one bit at a time, and ask what its character is. One place is shady, quiet. Another is hot, by a wall which the sun pounds. In another place, I walk to the tennis court, from the house, each day, and on my way I cross the lawn.

I ask myself what is the inner character of each of these spots, what I might do to intensify what is already there, how the character now latent there can best be amplified.

Of course, I am concerned with sunshine and shade, water, drainage, soil condition, a warm wall that catches the sun for growing peaches or honeysuckle; an old tree which can carry a climbing wild rose or clematis. That is just the stuff of gardening. But — and this is less obvious, to gardeners, even — here again, in making a living world, we must above all be concerned with centers. Centers govern life. The fundamental process asks us again to see, feel the centers latent in the land.

In the Eishin project, there was a swamp in the vegetable fields. We made the lake with a hard stone edge in its most critical points: this stone edge and the bridge then allowed natural garden and plant life to attach themselves to it, just as the land required. We left the tea bushes where they were, in places, from the previous agricultural life of the land (you can see them in the photograph on page 255). The land liked the tea bushes. The memory of the land then continued to grow, within the context of the new things we were building there.

A painting of a handful of flowers. Here the centers are visible, and accentuated: the picture works just as a beautiful garden does, center by center, each illuminated by the others. Lily Alexander

13 / SPLENDOR IN ORDINARINESS

The beat of informality against the discipline of geometric order, can lead to the most splendid qualities — seen, for instance, in the photograph on pages 252-53. Even big public gardens need some version of this formality and wildness, the relation of the cultivated to the wild. This character, rather like ROUGHNESS and CONTRAST, comes about as a result of natural unfolding where people and nature meet. The wild growth of the grass, trees, bushes, meets a need for order that comes from people — the lawn where the two-year-olds can play and roll around, the flattened path where it is comfortable to walk, the hard edge of a swampy pond which allows us to meet the water and stare at it.

Leaving trees intact: we make things go around them, give them the dignity of the structure the growing trees have established there. Then plant in relation to the sun and

shade which is created. Allow the mess, where it wants to be, as a natural counterpart to the cultivated and pruned and tamed.

The path meanders through the landscape. Sometimes it is solidified to form part of a building. The trees stand, buildings go around them.

The meadow is cut, nettles and bushes are cleared away.

At Meadow Lodge the blackberry bushes grow, wild, straggle along the lane. The boxes, trays, seedlings, lie against the house. A toolshed stands, made up of plywood, boards, chickenwire

Tall cherry blossoms planted around the main gate of the Eishin Campus.

and rusty corrugated iron. It gives the touch to the garden which is there for usefulness. Lilies grow in the corner of a field.

A line of apple trees are planted to form an avenue, leading to the entrance of the West Dean Visitor's Centre. A terrace is closed off by pots.

The back garden of Eishin: hedges, tea bushes, fences, bushes, all easy, and just right like a patchwork quilt against the formal dignity of the buildings (page 236). Sitting in this back garden, not far from the magnificent gate shown on this page, among the seedlings whose boxes

Garden of of the Upham house, looking towards Berkeley and the San Francisco Bay. Christopher Alexander, with Randy Schmidt, Carl Lindberg, and Gary Black, 1988

Garden of the Medlock house, looking towards Vancouver Sound and the Olympic peninsula. Christopher Alexander, with Kurt Brown, James Maguire, and Ann Medlock, 1988

lay on the porch, Mr. Murakoshi said to me, quietly: "You have taught us to appreciate another way of life."

He was much too kind to me. But it was a very nice way for him to summarize my hopes and aspirations as an architect.

14 / I DON'T CARE KIND OF CARING

The loveliest gardens, I think, come from allowing nature to take its course very strongly, helping it to be more like nature, allowing things to be themselves.

I remember once a girl stopped on the road outside our garden in Berkeley; she spoke across the wall. "I love it here," she said, "I wish I could live here."

The garden in those days was full of rabbits, fish in the pond, straggly plants growing where they could, earth, beaten earth on the ground, boxes all over the place. But to that girl it was paradise, "I wish I could live here," she said again. It was a very ordinary place. I don't know that it would ever make it to the pages of a garden magazine.

And yet, is there anything more wonderful?

The mass of flowers against the wall. We see the flood of red and pink roses, they establish themselves, and in relation to these roses, geraniums grow. Next to the geraniums, the feeling of small blue flowers, periwinkles and forget-me-nots: it is the red and pink which generates the blue.

A favorite seat, an old tree stump carved to make a chair. Later, irises were planted around it. My garden at Meadow Lodge in England.

The landscape we built and tended for the Eishin campus, including the tea bushes we found there and kept, and four years of growth. Christopher Alexander, Hisae Hosoi and Hajo Neis, 1989.

15 / THE STRUCTURE LIKELY TO APPEAR IN GARDENS SHAPED BY LIVING PROCESS

The outline of each garden made by living process, and each part of every garden, is likely to be positive space. Within the positive space of each garden, further positively spaced structures will have been placed, creating local symmetries, which then form positive space at smaller scales, so that the garden, even when it is raw and ungrown, already has positive space that one can feel at many levels in large centers and small centers.

There will be few places which do not form definite and coherent centers of this kind. We shall see an interaction of formal shapes possessing local symmetries and forming large scale centers (lawns, courts, hedges, flower borders, paved areas, a seat around a tree) with land-inspired shapes that have smaller-scale symmetries typical of grassland, forest, and rocks. And these areas themselves will often have very subtle minor centers and symmetries, like the raked sand in a Japanese sand garden, connecting them to the formal symmetries of the outline, to the smallest symmetries of nearby buildings, bushes, trees, plants, and water.

Color will probably play an important role, in flowers and flowering bushes and trees of different season — even if it is based only on the huge variety of greens. Seats, fences, and other centers, placed in the landscape to connect the garden with the buildings, will form a continuity of structure between inside and outside, and make the gardens usable almost in the sense that rooms are usable. Curved forms will enter in only rarely. More often, rectilinear structures will interact with organic contour-inspired forms. Walls, catching the sun, are likely to play a special role for climbing trees, fruit, apricots, roses and trellises. Wildness covers everything.

Yellow wall, oil on panel, 13 inches by 20 inches
Christopher Alexander, 1995