Unfolding values in places, spaces and paces: Service systems thinking and architectural theory

David Ing
Symposium on Service Systems Science
Tokyo Institute of Technology
February 28, 2015

Lacking history to study organizational learning circa 1995, videos and book explored *How Buildings Learn*

1. How Buildings Learn - Stewart Brand - 1 of 6 -...
28,610 views • 2 years ago

6. How Buildings Learn - Stewart Brand - 6 of 6 -...
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2. How Buildings Learn - Stewart Brand - 2 of 6 - "T...
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The Oak Beams of New College, Oxford
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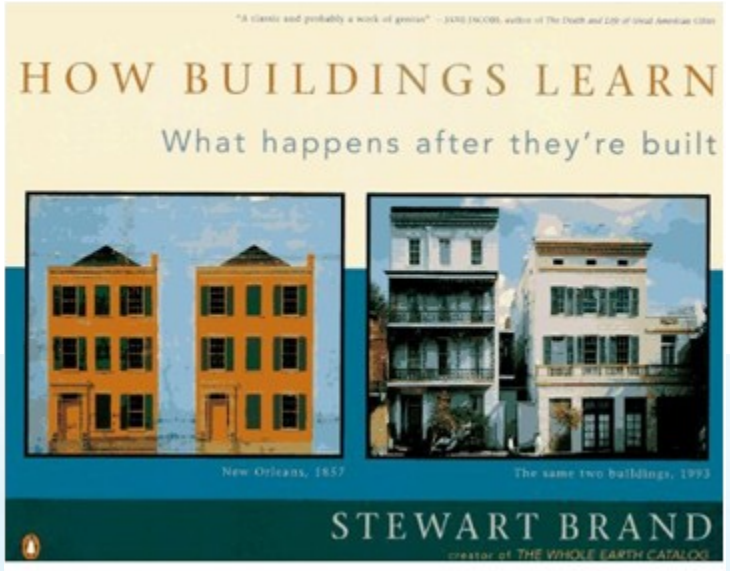


“Would you choose the service system on the left or the service system on the right?” echoes Alexander's carpets

The Berlin prayer rug

Well known Kazak from Tschebull collection

If you had to choose one of these two carpets, as a picture of your own self, then which one of the two carpets would you choose? [p.28]

In case you find it hard to ask the question, let me clarify by asking you to choose the one *which seems better able to represent your whole being, the essence of yourself, good and bad, all that is human in you*. [p..29]

Christopher Alexander, *A foreshadowing of 21st century art – The color and geometry of very early Turkish carpets* (1993)

Can we make better service systems, learning inductively from architecting built environments?

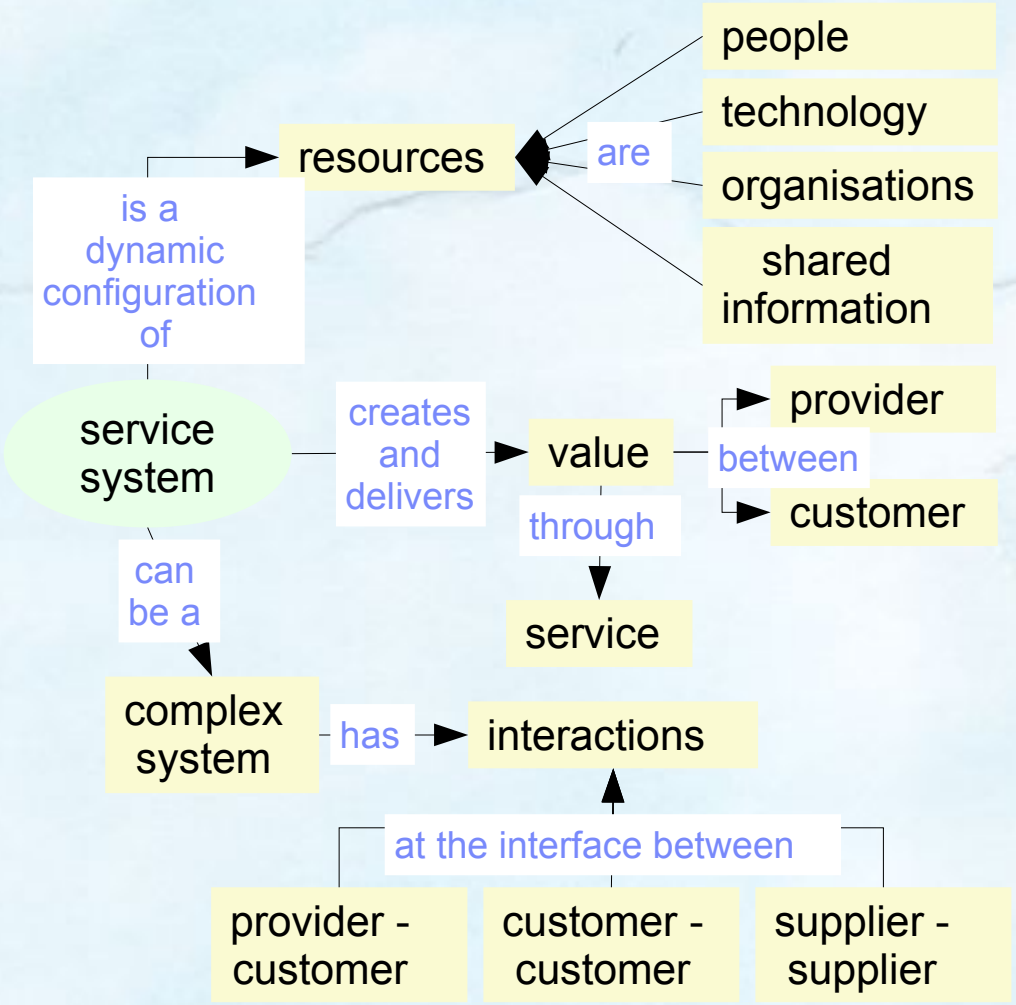
Deduction == (1) rule, (2) case, (3) result;
Induction == (1) case, (2) result, (3) rule;
Abduction == (1) result, (2) rule, (3) case.
From Charles S. Peirce via Barbara Minto. 1976.
The Pyramid Principle: Logic in Writing and Thinking.

(3) Rule:
A service system can be enjoyed by a variety of parties with value(s) unfolding over time

(2) Result:
Engaging with service systems can be reframed as experiences in places, spaces and paces

(1) Case:
Approaching the Eishin campus as a service system appreciates the practices of Christopher Alexander in creating a pattern language and combining systems of centers.

A definition of a service system speaks to its being, yet to be complemented by how it becomes (better)



A service system can be defined as a dynamic configuration of resources (people, technology, organisations and shared information) that creates and delivers value between the provider and the customer through service.

In many cases, a service system is a complex system in that configurations of resources interact in a non-linear way. Primary interactions take place at the interface between the provider and the customer. However, with the advent of ICT, customer-to-customer and supplier-to-supplier interactions have also become prevalent. These complex interactions create a system whose behaviour is difficult to explain and predict. (IfM and IBM, 2008, p. 6)

Source: IfM, and IBM. 2008. *Succeeding through Service Innovation: A Service Perspective for Education, Research, Business and Government.* Cambridge, UK: University of Cambridge Institute for Manufacturing. http://www.ifm.eng.cam.ac.uk/ssme/ .

An *unfolding* is a process which gets you from one stage or moment of development to the next moment of development, in the evolution of a neighborhood or in the evolution of a building

1. An unfolding is a dynamic configuration that acts to generate form.
2. An unfolding arises from the particular whole in which it is forming. It is shaped by the whole, and acts upon the whole, and causes the rebirth of the whole.
3. An unfolding is by its nature personal, and requires human input and human feeling from the people doing the work, as an essential part of its contribution to the formation of the environment.

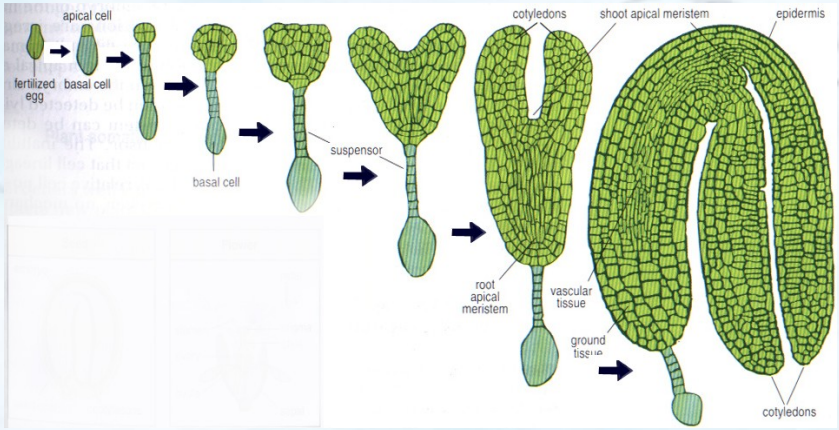
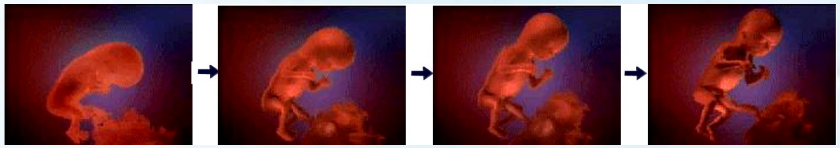
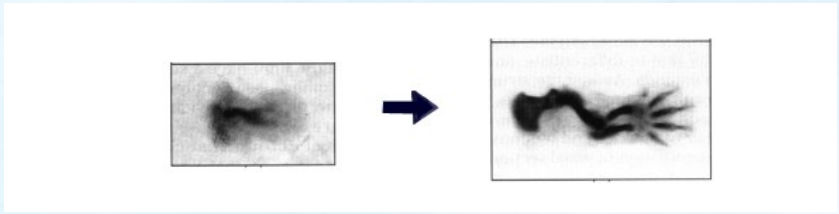


Diagram of a typical angiosperm (flowering plant) unfolding



Photographs of a human embryo unfolding

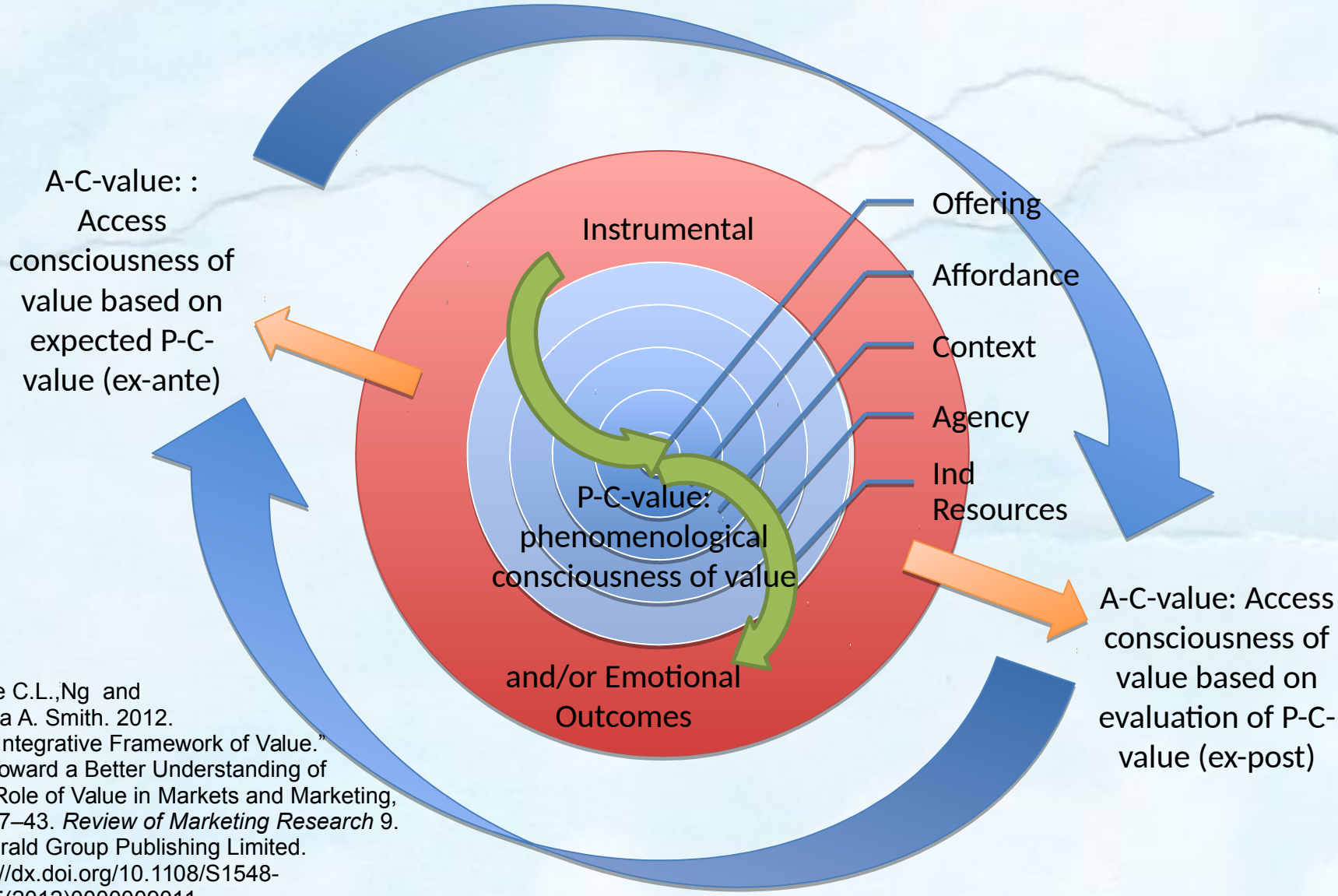


Two photographs, three days apart, of a mouse foot unfolding

It is helpful to compare such unfoldings with similar phenomena in plant morphogenesis and embryology. Both in the angiosperm shown below, and in the embryo shown beneath it, you can picture each unfolding as a limited and brief process which in the first one gradually shapes the seed, and in the second, takes the blur that is the beginning of a hand in the embryo, to the next stage of development where the hand gets its first outline fingers.

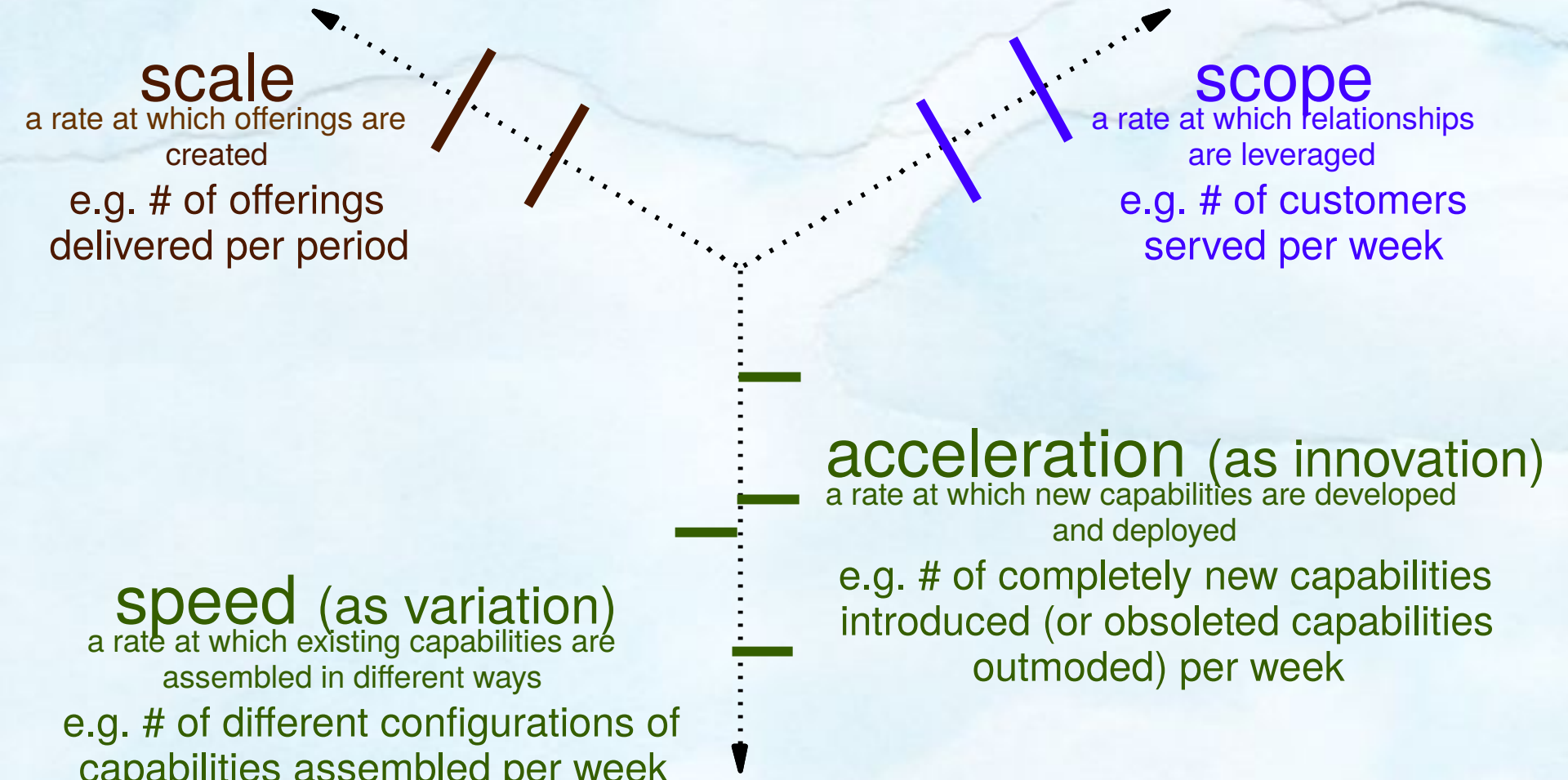
Adapted from Christopher Alexander, “What is an unfolding?” at http://www.livingneighborhoods.org/ht-0/whatisanunfolding.htm

Value is dynamic, with access consciousness ex-ante and ex-post, and phenomenological consciousness in lived experience

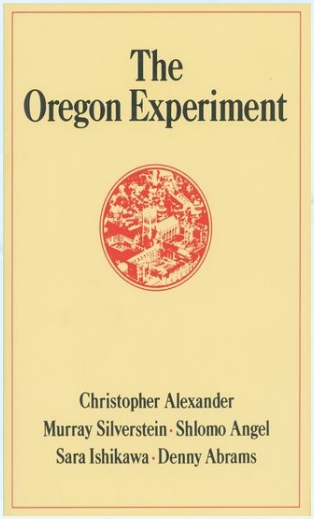


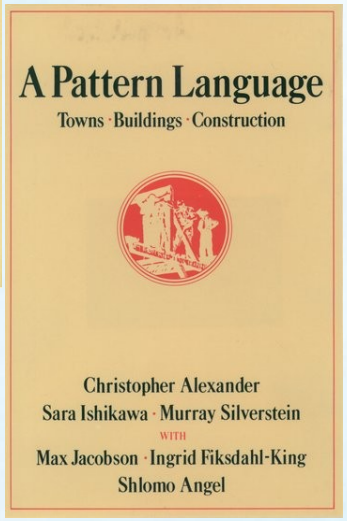
Irene C.L.,Ng and Laura A. Smith. 2012. "An Integrative Framework of Value." In Toward a Better Understanding of the Role of Value in Markets and Marketing, 9:207–43. *Review of Marketing Research* 9. Emerald Group Publishing Limited. http://dx.doi.org/10.1108/S1548-6435(2012)0000009011.

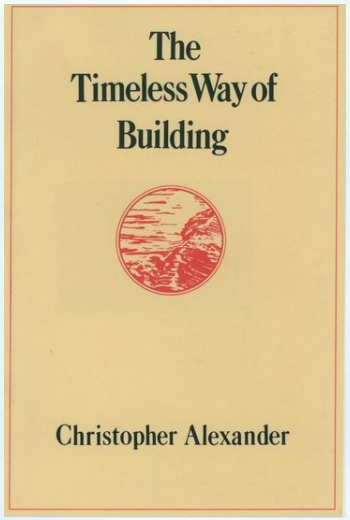
Places, spaces and paces trade-off between scale, scope, speed and acceleration

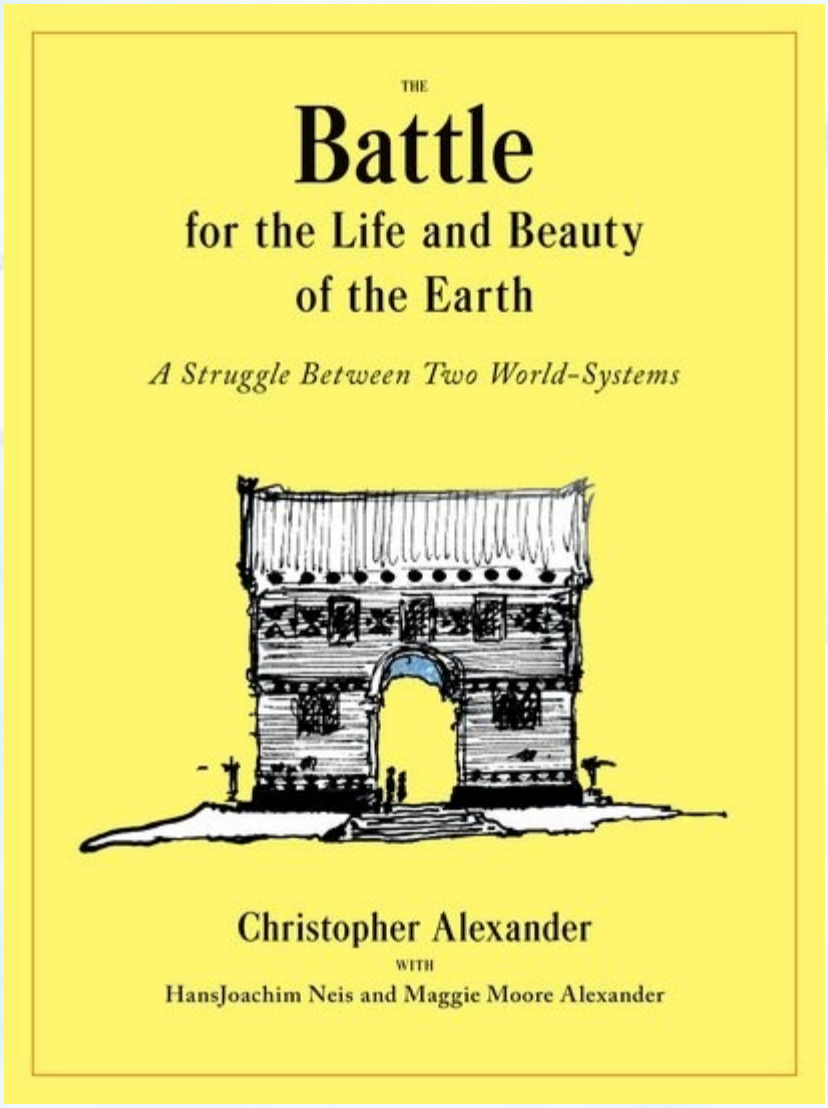


The writing of 1975-1979 by Alexander was prescriptive; the 2012 is reflections on practice









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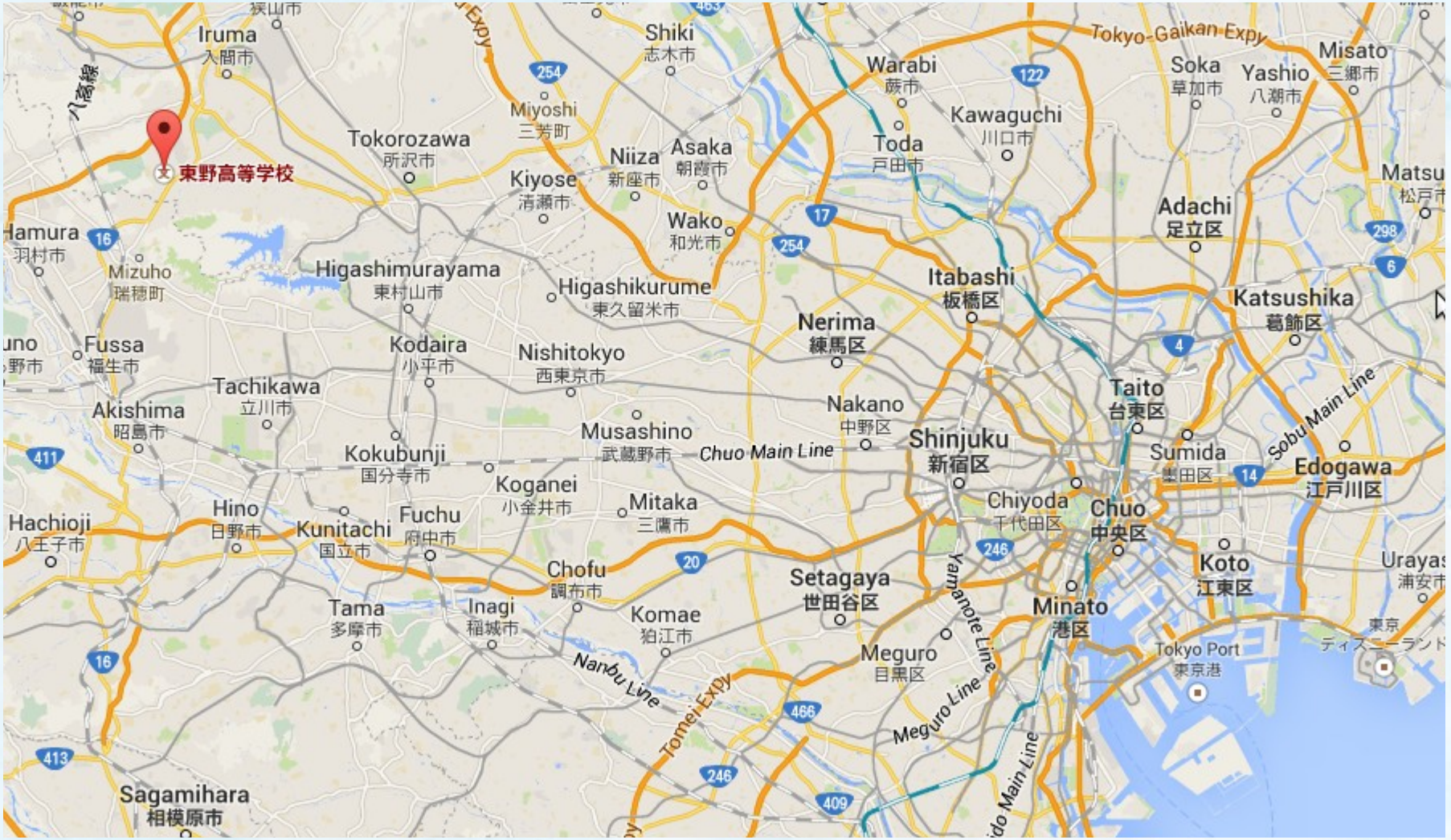
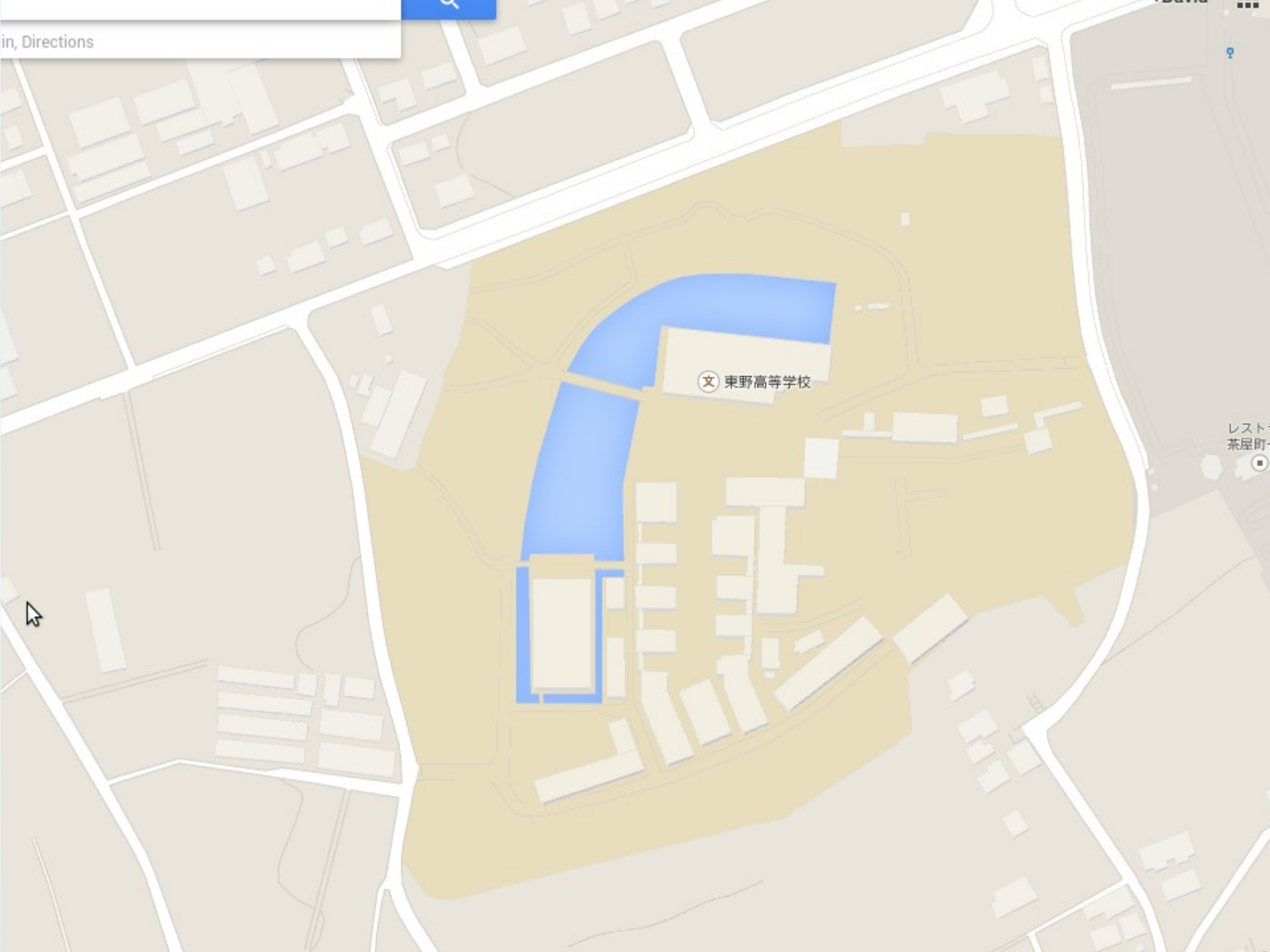
twitter 犬猿の仲印パからノーベル平和賞受賞者。17歳のマララさんについて「テロリストが最も恐れるのは『教科書を持った少女』だ」と潘基文氏。＜ペンは剣より強し＞

The site originally was tea fields in Iruma, Saitama prefecture, northwest of Tokyo

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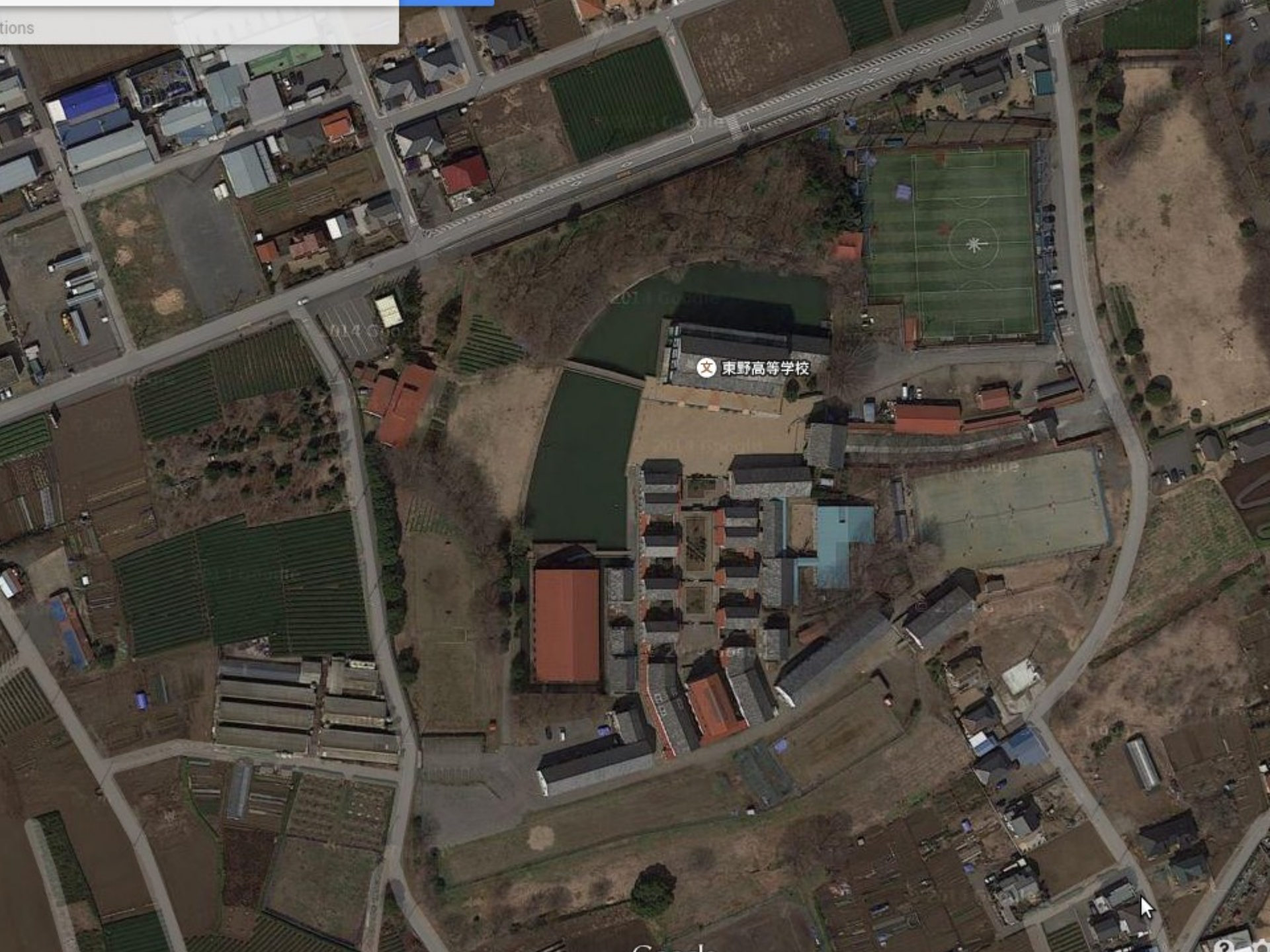
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The practices employed on the 1985 Eishin project can be traced with 8 activities

1. Interview on hopes and dreams
2. Make a “poetic vision” as first sketch of a pattern language
3. Make the rudimentary pattern language physically coherent
4. Refine the language through discussions
5. Obtain approval of the pattern language
6. Renegotiate pattern language with space and money within budget
7. Find systems of centers in (i) the notions in people's minds, and (ii) the places in the land. Combine them.
8. Adjust the site plan on the site itself (not on models)

(1) Interview on hopes and dreams

Our work on the Eishin project began, as promised in the contract, with the construction of a pattern language. We spent four to five months engaging students, teachers and administrators in creating this new pattern language, which would spring from their hopes and dreams as well as from the land itself.

The very first thing we did was spend two weeks just talking to different teachers and students, to get a feeling for their hopes and dreams. These talks were one-on-one and often lasted about an hour, for any one interview, during which we asked questions, talked, probed, explored dreams of an ideal campus, and tried to understand each person's deepest visions as a teacher, or as a student. We asked people about their longings, and their practical needs. We asked them to close their eyes and imagine walking about in the most wonderful campus they could imagine. [Alexander (2012) p. 117]

Examples of People's Dreams

Here are a few examples of the dreams of teachers that, with many others, formed the base for our first rough Pattern Language draft.

"The main entrance is critical to the character of the whole campus, its placement on the edge of the site must be done with great care. I see the main entrance as a gate, where I can greet students and teachers in the morning."

"I see the new campus surrounded by some fence or wall."

"There is one essential center, where the sun shines on the buildings, and which catches the spirit of the whole school. It is an open place, where very important buildings lie .... Something is there, do not know exactly what, that makes the place catch the spirit of the whole school, and stays in the memory".

[p. 121, 10 more paragraphs not transcribed]

(2) Make a “poetic vision” as first sketch of a pattern language

1. The new campus will consist of an outer precinct with all of the sports fields, gardens and outer buildings, and an inner precinct with all of the buildings, high school and college activities.
2. The inner precinct of the school is made up of seven major entities.
3. The entrance street, which connects the outer boundary to the inner boundary.
4. The main yard, which contains the great hall.
5. The ta-noji center, which contains two narrow crossing streets, and the communal functions, and the college departments.
6. The home base street, which contains the individual home base buildings, and the common space for high school students.
7. The college cloister which contains the library, and special college functions such as research center.
8. The lawn which is shared by the high school and college.
9. The gymnasium, which stands at the end of the home base street, and forms its head.[2]

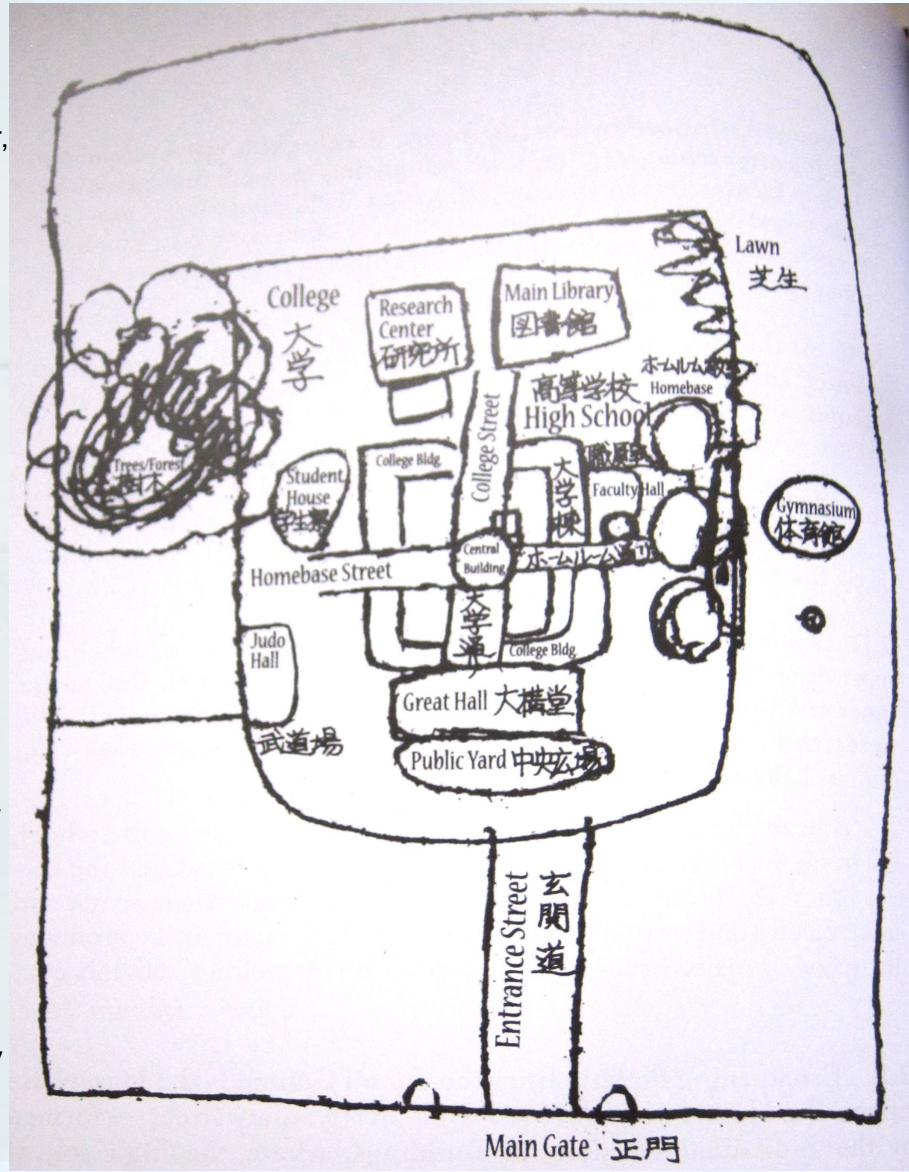
[2] As it turned out in the event, the gymnasium was placed on the lake, not on the home base street. In the evolution of a language, contents do sometimes change.

It should be strongly emphasized that this very brief and rudimentary pattern language was not created by sociological "research," nor was it done by making a list of what people spoke about. Rather, it was a poetic vision, crude but potent, which tried to flesh out in architectural language and in three dimensions, a physical world whose inner meaning corresponded to the meaning conveyed to us by teachers, staff, and students, and by them to one another, as discussion of the nature of the school began. This language was made and polished by us, the architects. But it was made, more essentially, by the teachers and students from the raw material and work and expressions of intent that they first gave to us. [pp. 122-123]

(3) Make the rudimentary pattern language physically coherent

The Completeness of the Language: Seven Principles

- **Relationships**. Each pattern establishes certain relationships which should exist in the finished campus. The sum total of those relationships, expressed by the patterns in the language, acting together, define the possible configurations which this language generates. [p. 124]
- **Spatial**. A given pattern contains, or defines, certain spatial entities. The relationships are defined among these spatial entities.
- **Reliability**. The essence of these relationships is that they must be reliable, and true. They cannot be arbitrary relationships (as they might often be in a single person's design). They need to be sufficiently true, so that we can trust them, and would want to find these relationships present in any version of any campus that might be generated by this language.
- **Consistency**. It is not necessarily easy to define a system of patterns which is consistent. For example, if one pattern asserts a certain relationship between two entities, and another pattern asserts a further relationship between the same entities, but one which is inconsistent with the first, then that system of two patterns is inconsistent, and can only, with great difficulty, work to generate real physical configurations.
- **Inconsistency**. From time to time, two patterns which are physically inconsistent may be refreshing and life-giving. This happens because the contradiction generates vigor and opens new ideas.
- **Completeness**. A system of patterns is complete if it contains sufficient relationships to allow a well-formed configuration to be built.
- **Coherence**. A system of patterns is coherent if the relationship specified amongst the patterns tend, most of the time, to generate easily graspable mathematical configurations.



(4) Refine the language through discussions

Once we had the language working to the extent that it could generate coherent plans, we then began a series of meeting with the school's Building Committee to discuss and refine specifics of the various patterns. [....]

Types of discussion included:

1. The degree of separation or integration of high school and university.
2. The existence of separate buildings.
3. The meaning of the homeroom street.
4. The meaning of the tanoji center.
5. Walking around in the rain, and how much cover to have.
6. The number of buildings which would be shared between the college and the high school.
7. The material of the buildings.
8. The degree of difference and autonomy of different classroom buildings.

What was remarkable was that the teachers understood the specific details of the pattern-language at a practical and concrete level. [p. 126]

Examples of Kinds of Discussions

Clinic Room Teacher

… Her main concern was sun in the health room. ….

Political Economics and Social Studies

Homeroom very important. … See each student's face clearly. Little bigger desk with containers. Much light, clear windows. No plastics. Traditional materials. Calm. Wood.

President of Student Body

He likes the classroom …. He think that the stairs in the existing school are grotesque, too dark, too hard, so he wants to have some more fun stairs in the new school.

Chairman of Budget Committee

… students can walk around barefooted, so that the foot can touch the ground directly, with grass, flowers, and earth. Education should be more related to nature not to the city. […]

Chairman of Personal Learning

He is very keen on a large gymnasium. [….]

[pp. 128-130, 7 more paragraphs not transcribed]

(5) Obtain approval of the pattern language [page 1 of 8]

This pattern language is a list of key centers, each of which contributes some essential quality to the campus. The list was established long before any design started. [p. 130]

The list contains 110 essential patterns, each describing a generic kind of center, and itself made of other centers. As they are defined here, these 110 key patterns completely govern and define the life of the school. Even before we have any idea about the physical configuration of the buildings, their shape, or design, or the way these centers are made real in space, it is already obvious that the school is given its life to an enormous degree, merely by this list of patterns. [p. 151]

1.	Global Character of the Campus
2.	The Inner Precinct
3.	The Buildings of the Inner Precinct
4.	The Streets of the Inner Precinct
5.	The Outer Precinct
6.	Features of the Inner Precinct
7.	Special Outdoor Details
8.	Interior Building Character

1.1	An outer Boundary surrounds the Campus.	A white, 60 cm wall serves as the based for a wooden fence. [....]
1.2	Contained by this Outer Boundary there is an Outer Precinct. ...	A second wall, far inside the first, surrounds the school itself, and forms a second zone between the first and second wall. [....]
1.3	The Inner Precinct is a densely built area where School and College have their major buildings and activities.	It is the place where the daily life of students and faculty occurs. [....]
1.4	...	...
1.5	As a whole, the Campus is given character by stone foundation walls, natural concrete walls, wood columns, ...	In addition ...

(5) Obtain approval of the pattern language [page 2 of 8]

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2.1	The Entrance Street to the campus is a highly visible pedestrian Way. It begins at the Outer Boundary of the Campus, and ends at the Inner Precinct.	The Entrance Street is vital to the character of the whole campus. [....]
2.2	The Small Gate marks the outer end of the Entrance Street.	It is a small, imposing building, which has height and volume.
2.3	...	...
...	...	...
2.14	The lake is a peaceful place to rest.	At the lowest point along the land, there is a lake, with grass and trees along the edges ...

(5) Obtain approval of the pattern language [page 3 of 8]

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3.1	The main building of the Campus is the Great Hall.	This great hall is a long hall with seating for 600 people, surrounded by rooms and galleries, so that it can seat a full congregation of 1200 ...
3.2	The second building of the Public Yard is the Eishin Museum -- a small house, which explains the place ...	[blank]
3.3	...	...
...	...	...
3.12	The Campus Library is the center of the college cloister. It stands three stories high, …	In the university, a place of very great importance, a main place, quiet and with quiet walks and gardens near it. [....]

(5) Obtain approval of the pattern language [page 4 of 8]

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4.1	The Public Yard has a gravel surface, with stone paths crossing it.	It is informal and quiet in character. In some ways the yard is like a forecourt to the a major building. [....]
4.2	The Homebase Street is the widest street, even wider than the streets of the Tanoji Center.	The Homebase Street is the forum where the high school students sense themselves as a large group ...
4.3	...	...
...	...	...
4.15	Around the tanoji grid, but inside the inner boundary, there is an additional passage,...	[blank]

(5) Obtain approval of the pattern language [page 5 of 8]

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5.1	The Wall which surrounds the Inner Precinct is quite irregular, and follows the buildings, and paths, ...	It is similar to the inner wall of a great Japanese castle. [....]
5.2	Outside this irregular Inner Wall, is the outer precinct, which surrounds the inner precinct, ...	The outer precinct is divided into a series of roughly square pieces of land, each with its own character and purpose. [....]
5.3	...	...
...	...	...
5.25	And finally, there is a Path, which goes all around the Outer Precinct ...	A path around the site, with grave on the ground for walking and informal jogging ...

(5) Obtain approval of the pattern language [page 6 of 8]

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6.1	Inside the inner precinct, the buildings and exterior spaces are placed in such a way that there is a subtle, indirect path, passing through the school, and always reaching places ...	
6.2	The buildings themselves continue this feeling, in their inner structure.	All the buildings are organized internally, to produce a rather intimate collection of larger rooms and smaller rooms ...
6.3	...	...
...	...	...
6.22	Somewhere in the school, perhaps outside the Calligraphy Room, there is a Small Exhibition Space or Gallery, ...	This space will be located in such a way that people who just walk by can see the displays without having to go into a special room.

(5) Obtain approval of the pattern language [page 7 of 8]

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7.1	The approach to many of the buildings is indirect, and passes through a green area, ...	The approach to the building is more like a traditional approach to traditional Japanese buildings perhaps a gravel approach way ... with changes in direction, passing through different courtyards.
7.2	There will be stone paths, particularly in the inner precinct, following the main lines of movement.	The homeroom street has paved terraces along both sides, with an earthen street in the middle where there are trees -- maybe gravel on the ground.
7.3	...	...
...	...	...
7.8	Flowering cherry trees, where they are very visible in spring, are placed in particular locations ...	[blank]

(5) Obtain approval of the pattern language [page 8 of 8]

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5.	The Outer Precinct
6.	Features of the Inner Precinct
7.	Special Outdoor Details
8.	Interior Building Character

8.1	The interior character is warm and subdued: wooden columns, floors and walls in places; pale yellow wall color, ...	Wooden columns, often visible; Wood floors in classrooms; Passages and more public areas, floor of soft red tile; ...
8.2	Floors of many buildings are raised, slightly, off the ground.	... each building an extra two feet of height ... and helping to make the whole thing a little more stately.
8.3	...	...
...	...	...
8.9	Inside, here and there throughout ... there are surprising soft highlights of color, shining out among the subdued colors of the rest	For the most part, the school is composed of materials with beautiful, subdued, natural colors; wood columns; …. But, occasionally, and only where necessary, highlights of lively colors are used. [....]

(6) Renegotiate pattern language with space and money within budget

How can something like the cost or budget be made practical?

... we finish the pattern language phase with a serious analysis of space and money. It is done right away, so that any hidden conflicts are visible, and can immediately come into the open to get resolved.

First of all, we make a record of all of the spaces and areas which were defined by the pattern language -- adding up, pattern by pattern, the total outdoor space and indoor space. In our case, the analysis showed us that the requested numbers were too large. [….]

AREAS REQUESTED BY THE FACULTY			
A. Built Space (indoor space in square meters)	**First guess requested**	**Available 73.4%**	**Renegotiated finalized**
Public Yard Buildings	**945 m²**	**693 m²**	**750 m²**
Buildings of the Tanoji Center	**7583 m²**	**5566 m²**	**5604 m²**
Cloister (research center)	**1350 m²**	**991 m²**	**1150 m²**
Homebase Street buildings	**5680 m²**	**4169 m²**	**4300 m²**
Buildings in the Outer Precinct	**2432 m²**	**1785 m²**	**1400 m²**
Total	**17990 m²**	**13204 m²**	**13204 m²**
B. Coverage of Land (outdoor space in square meters)	**First guess requested**	**Available 79.5%**	**Renegotiated finalized**
Total	**84286 m²**	**67000 m²**	**67000 m²**

Second, as the simplest way to trim all space to our available budget, we made an average percentage reduction for all items, one figure for trimming indoor space; and then another for exterior land area. Each item was trimmed by a similar (but not identical) percentage. [....]

Third, we then asked the faculty to re-allocate the spaces, keeping the same trimmed totals, in order to conform to the available resources. The rule was simple: they could increase some, but must then decrease others, so that the total areas remained as they must remain.

(7) Find systems of centers in (i) the notions in people's minds, and (ii) the places in the land. Combine them. [page 1 of 3]

The first system consists of **patterns** created notions or entities that exist in people's minds). These patterns exist in a loose and undeveloped form in people's minds, even if they have not explicitly built a pattern language. When the pattern language *is* explicitly defined, it is more clear and makes a more powerful system which will get better results, especially because it comes from the feelings of people themselves. [p. 169]

The Most Important Centers Given by the Pattern Language

... the patterns together, geometrically … does not indicate any one arrangement on the land.

1. The **Entrance Street**.
2. The entrance street leads to a big square element which we refer to as the **Tanoji Center**.
3. This was to be the core of the college, and the center of gravity of the **Five College Buildings**.
4. Leading out from the Tanoji Center, in some direction, is **The Homebase Street**, the core of the high school.
5. **Individual Classroom Buildings** open along the **Homebase Street**.
6. The **Great Hall** and **Main Square** next to it.
7. The **Library and Research Center**, to one side. [p. 170]

Diagram 1: Seven most important centers in the pattern language, which together give a broad conceptual picture of a possible layout that the centers can have. Not to scale.

(7) Find systems of centers in (i) the notions in people's minds, and (ii) the places in the land. Combine them. [page 2 of 3]

The second system exists in the form of **places** on the site, discernible places that can be seen and felt on the site, if you have sufficient sympathy with the land. You can make this system explicit, by making a map of the centers, and paying attention to their structure. [p. 169]

The Most Important Centers Suggested by Land Forms

... "natural places" in the land.

1. **Natural Entrance Position**. The most important among these centers was the location of the main approach. This was in the southeast corner, partly because of a bus stop in Nihongi village, and partly because of the feeling of one's natural desire about how best to approach the site.

2. **The Ridge**, running along the south of the project site. A beautiful spot, with breeze, sunshine, view ... and a very delightful feeling. This was the high point in the site, and it was on this very point that we sat and looked and sat and talked, until we began to see what was really there to be seen.

3. **The Swamp**, where vegetables used to be grown, the low point in the terrain -- a kind of swamp -- that later became a lake.

4. **A Natural Place for Large Buildings**, a zone in the middle, running the way contours ran, from north to south.

5. **Minor Entrance Position**, the northwest corner -- a natural high spot, from which to view the site, also a natural point for a secondary entrance.

6&7. **East and West Ends of the Ridge**, the two ends of the ridge, which formed natural high points, and at each end, the feeling of a terminus, along the two ends of the ridge. [p. 171]

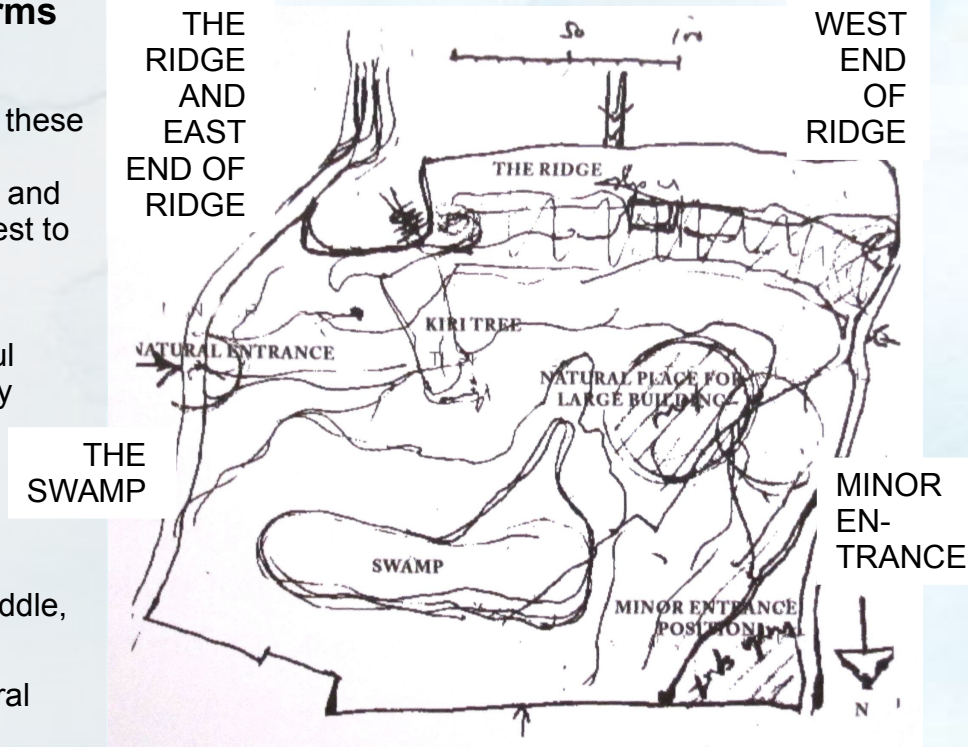


Diagram 2: The seven most NATURAL centers in the land, which, together can lead to a basic possible layout that the centers can have, in their LOCATIONS in the land.

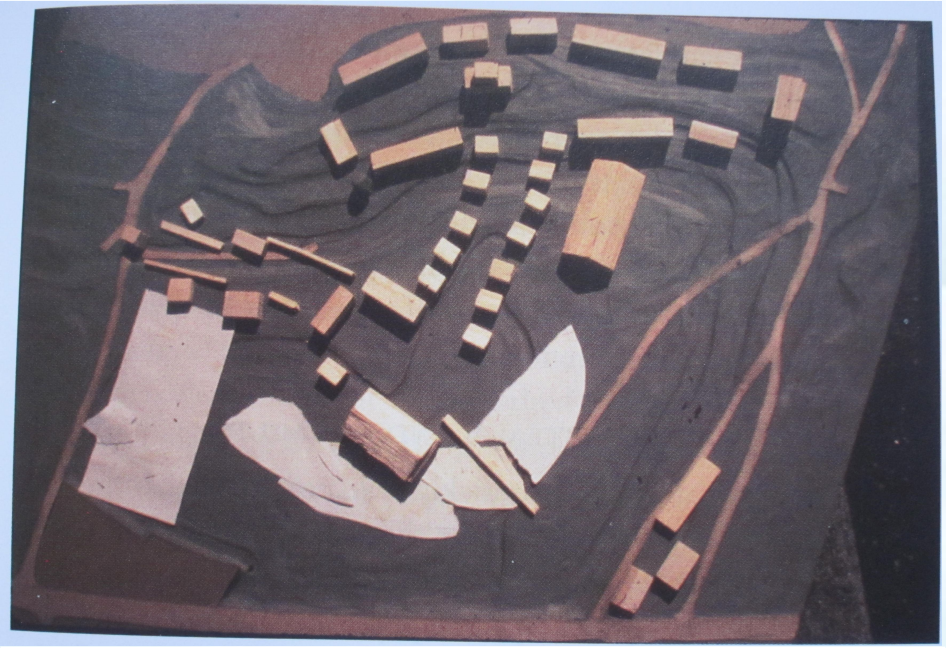
(7) Find systems of centers in (i) the notions in people's minds, and (ii) the places in the land. Combine them. [page 3 of 3]

... to bring these two systems of centers together. We have to hunt for a single configuration which springs from both centers, and integrates the qualities of both. We must find a way in which the system of centers defined by the pattern language can be placed, so that it enhances, preserves, and extends, the system of centers which is already in the land. It is a kind of healing process, which uses the new centers given by the pattern language, to heal the configuration of the old centers -- those that exist in the land.

... this is the single most difficult phase of the work. ... it took ... about nine months of continuous effort, to get the site plan right. [p. 173]

... after ... months of frustration, the problem did get solved. [...] a new point emerged. The fact that the homebase street would be more powerful as an *approach* to the Tanoji Center, than as something *hanging off* it. This was hard to see, at first, because it implied reversing the main sequence of the pattern language. But when we tried it, it was clear that the sequence almost instantaneously "jelled" with the land configuration.

Instead of this:	We now had:
1) Entrance Street	1) Entrance Street
2) Main Square	2) Main Square
3) Tanoji Center (College)	3) Home Base Street (High School)
4) Home Base Street (High School)	4) Tanoji Center (College)



The small balsa-wood model of the site, scale 1:500, on which the solution finally became apparent

(8) Adjust the site plan on the site itself (not on models)

We have already made it clear that nearly all of our work on the site plan was done on the site itself. Whatever we did on models, we used the models as if they were site itself -- and relied on feelings that we could feel in the model, imagining that it was the site itself. This was made necessary by the huge distance between California and Japan.

As one works on a site, and the plan gradually emerges, it is necessary, of course, to leave marks -- sticks, stones, markers of various kinds -- to fix the position of the different things which have been decided. On the Eishin site... the site was covered in tea bushes. [….] A marker therefore had to be about six feet high, even to be seen at all.

So we used six-foot-long bamboos. [….]. We ... tied different colored ribbons and cloths -- white, yellow, red, blue -- to the ends of our long bamboos. These were our markers -- our *flags*. [p. 180]

We had started making these flags quite early in the process. Even in July of 1982, as we began to get an idea established about the entrance position, we marked it with three or four of these flags. They looked beautiful. **And they made it possible to visualize the evolving site plan, truly, because they were real.**

When I came back to Japan after the breakthrough in November, we took about two hundred of these flags to the site, and began planning them in the ground, starting to make a realistic version as opposed to the very rough-and-ready diagram we had made so far. At this stage, now dealing with the real positions and dimensions on the land, we brought true feeling to the land itself. It was visible on the ground. [p. 181]

Colored flags, to identify various special purposes and areas on the land.

Solutions to problems come not from a pattern per se, but through generativity in the pattern language

In many problem-solving strategies, we try to attack problems directly. In doing so, we often attack only symptoms, leaving the underlying problem unresolved. Alexander understood that good solutions to architectural problems go at least one level deeper. **The structures of a pattern are not themselves solutions, but they generate solutions. Patterns that work this way are called generative patterns. A generative pattern is a means of letting the problem resolve itself over time, just as a flower unfolds from its seed:**

Image: Unfolding, by mrpeaches83 at https://www.flickr.com/photos/mrpeaches83/

9. This quality in buildings and in towns cannot be made, but only generated indirectly by the ordinary actions of the people, just as a flower cannot be made, but only generated from the seed (Alexander, 1979. p.xi)

An ordinary language like English is a system which allows us to create an infinite variety of one dimensional combinations of words, called sentences…. A pattern language is a system which allows its users to create an infinite variety of those three dimensional combinations of patterns which we call buildings, gardens, towns. ….

Thus, as in the case of natural languages, the pattern language is generative. It not only tells us the rules of arrangement, but shows us how to construct arrangements as many as we want which satisfy the rules. (Alexander, 1979: pp. 185 186)

Why is generativity important? First, ... most real problems go deeper than their surface symptoms, and we need to address most interesting problems with emergent behavior. Second, a good pattern is the fruit of hard work and intense review and refinement. Simple problems can be addressed through simple rules, since the solutions are more direct or obvious than we find in generative solutions. The pattern form excels an engaging the reader in generative solutions: to understand the principles and values of lasting solutions and long-term emergent behavior. Good patterns go beyond the quick fix.

[James O. Coplien, Software Patterns 1996, pp. 33-34]

Mainstream architecture and urban design are rationalistic and teleological; Alexander is ateleological

Attributes of the design process	Development philosophies	
	Teleological development	Ateleological development
Ultimate purpose	Goal / purpose	Wholeness / harmony
Intermediate goals	Effectiveness / efficiency	Equilibrium / homeostasis
Design focus	Ends / result	Means / process
Designers	Explicit designer	Member / part
Design scope	Part	Whole
Design process	Creative problem solving	Local adaptation, reflection and learning
Design problems	Complexity and conflict	Time
Design management	Centralized	Decentralized
Design control	Direct intervention with a master plan	Indirect via rules and regulations

Lucas D. Introna 1996. “Notes on Ateleological Information Systems Development.” *Information Technology & People* 9 (4): 20–39. doi:10.1108/09593849610153412.

Can we make better service systems, learning inductively from architecting built environments?

Deduction == (1) rule, (2) case, (3) result;
Induction == (1) case, (2) result, (3) rule;
Abduction == (1) result, (2) rule, (3) case.
From Charles S. Peirce via Barbara Minto. 1976.
The Pyramid Principle: Logic in Writing and Thinking.

(3) Rule:
A service system can be enjoyed by a variety of parties with value(s) unfolding over time

(2) Result:
Engaging with service systems can be reframed as experiences in places, spaces and paces

(1) Case:
Approaching the Eishin campus as a service system appreciates the practices of Christopher Alexander in creating a pattern language and combining systems of centers.