



**Rhombic Dodecahedrons & The Start of SCI-Arc** by Ahde Lahti

Questions for Ahde Lahti  
from Benjamin J Smith, University of Michigan  
11/10/2015

SCI-ARC

01) Why did you decide to leave Cal Poly?

Our Chairman of the department of Architecture had been demoted, falsely. So 6 of us went to Raymond Kappe and said we should just start a new school of our own.

02) What was starting SCI-Arc like?

We had a graphic revolution, my students printed silk screen posters and had meetings to see how we could do it.

Bill Simonian quit first and scouted for buildings, we landed in Santa Monica with 50 students and 7 faculty.

The first years were demolition and construction by students and faculty to create spaces to teach and lecture.

03) How did the Core Board develop and evolve?

We consulted with a lawyer, created a governing body, and started.

Ray dropped \$20,000 in the account to get things rolling.

04) How would you characterize SCI-Arc's pedagogy when you joined the school? How did it progress?

Fashioned after Walter Gropius' Bauhaus

05) What was the accreditation process like? Did accreditation change as the school ma-

tured?

We had a Wednesday night lecture series where we invited all the local architects to give a talk. Originally started at Calpoly Pomona by Bernard Zimmerman.

So when we went for accreditation every architect already knew about us. The board asked us for our purpose and method and then checked to see if it was actually happening.

06) What were some of the milestones of SCI-Arc's development?

I don't know, we were just trying to teach and survive with very little monthly pay.

07) What noticeable changes occurred at SCI-Arc while you were teaching there?

The emphasis changed every time we hired new faculty. From form development by necessity, to random form generators, and then to symbol generators and finally to personality generated forms (see page 33).

08) What precipitated your leaving SCI-Arc? WE declared ourselves tenured at the beginning, and 3 of us lost the legal battle. Leaving was the only option.

TEACHING

01) What is the most important thing an architecture student can learn?

There is a way to find a gem (sapphire) in a pile of gravel. Sort the probable size rock in a potentially rich area. Use water as the filter (density-weight). Use a pattern method of centering as the gem centers itself, Then looks at the other side where the gem is sitting. The student will find that gem in his/her own mind.

02) What techniques are necessary for architecture students to learn?

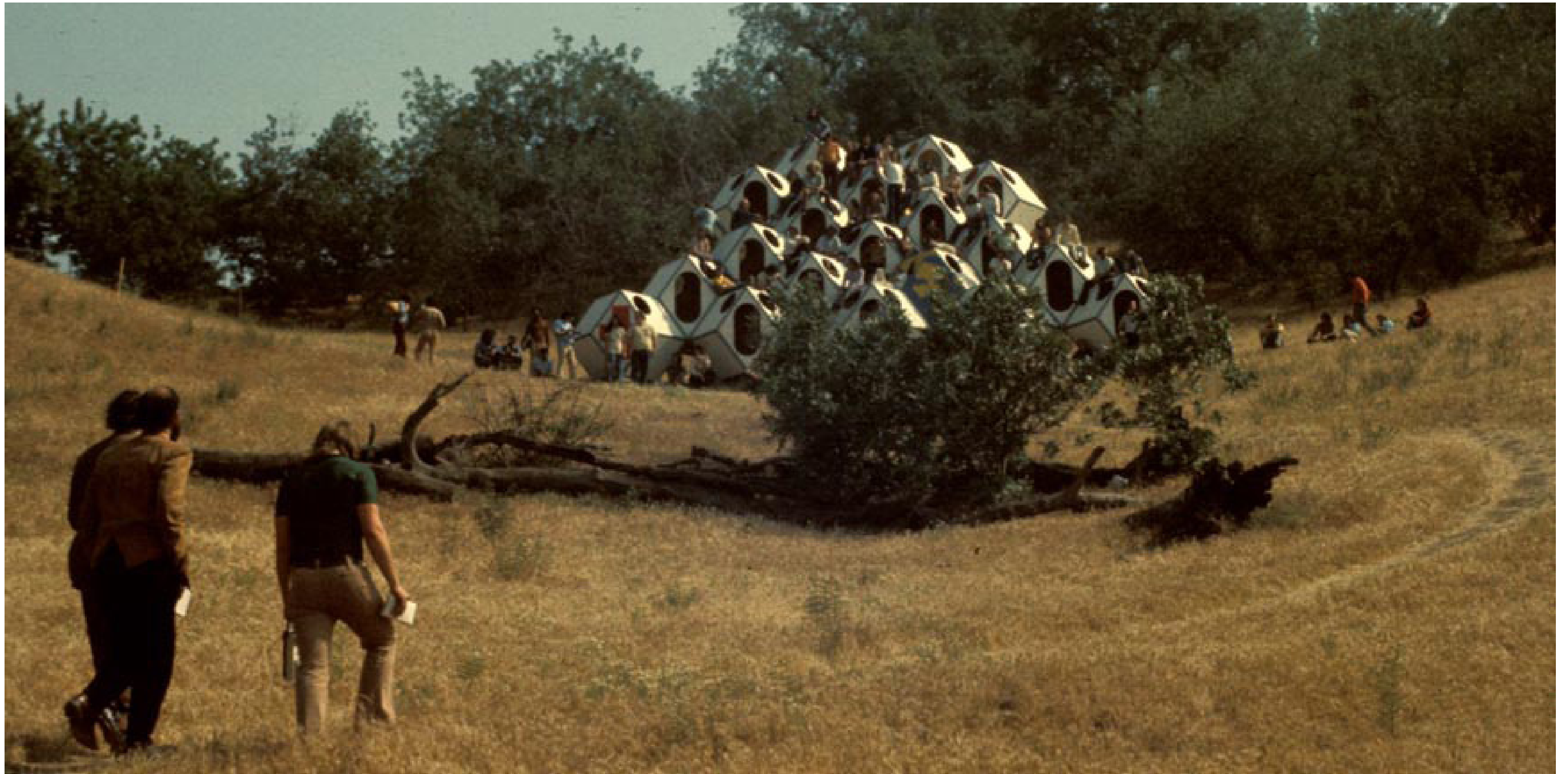
They actually have to give up on their convictions and learn to accept new and different material. You need a strong student, but at some point they have to rethink their standards, the philosophy of social interaction.

03) How do you cultivate the sensibility of your students?

You cannot lead your students, they have to each lead themselves, and carry the design to the goal you have them set. You will not get them there by pushing them up hill. Leading the team is a subtle process of educating each member so he or she is self directed. They are your vehicle to the future.

One cannot ever design for the future. You design to solve the problems at hand with the materials you develop. The future lies on your basic foundation. The next generation of students feels that they have designed for the future because they are comfortable in the environment you created 10 to 20 years earlier.

You are not teaching a NAME, first, middle, and last. They are not a number. You are teaching a vehicle to drive your design (designers) to a goal. You have created spaces, boundaries, buildings and cities, now you are looking for the next generation of actualization. You are actually looking for a system (C. W. Churchman: "System" pg 22) to integrate the complexity of today. The student is an individual but they may ride with me while we work on some ideas.



If you want to view to my soul, I am my web site (www.lahtidesign.com). It is written in HTML which, like any language is only a series of characters, and they create a story. You do not paint a "Russian Icon", you write it. Meaning the image is always a story, it has meaning and character, it has it's own life.

You cannot always pick your team (students), therefore, you are always designing the product and the team. They are one and the same. It is never automatic, it is always the challenge of the project.

Every member of your team has an individual life that has and will impact the final design. We often think that we are the designers, but in actuality, the team and their families are your raw materials, they become your resources. Why do I insist that the team is not isolated to the work day? You cannot use a mind creatively, if the mind is on another page. Family and the team's "off time" is what you cannot control, but it is a factor in the design process. Just like a meal is just fuel, but the ingredients can also have a flavor. The flavor is the goal.

04) How would you characterize your students' work?

I hope it is their own, not mine

05) What makes a good teacher?

The ability to lead from behind. Questioning their theory and giving the needed skill when asked.

06) What makes a good student?

The inquiring mind with a method to learn new techniques.

#### ARCHITECTURE

01) Do you differentiate the practice of architecture from the discipline of architecture?

No.

02) How would you characterize your professional work?

It is a series of self correcting, self referential diagrams, which become matter.

03) What makes a good architect?

Design is about the ability to work with others, yes, but it has to be tempered with the ability to know what it is you want. Not an image per say, but have a strong conviction and a system to implement that concept. The designer is a strange mix of hard and soft convictions.

04) What is architecture's most pressing concern?

I always have to rethink what the lowest common denominator for design. It's origins. I found that it is not an outside source, but the ability to connect the information trapped within my mind and project it into the world of material life. I rotate the bowl of mist and condense it into a solid form.

The montage of life can never be seen twice like a movie. We can see the outtakes but

never the script or the reel. Looking backward, you will see your footprints, but only you get to write the ones ahead. Dance lightly and make the most of all your prints!



I often think we're trapped back in history, not that it's bad, but that is where I am.

I still cut a piece of steel with a hack saw, depending on how thick. Thinking the arm exercise is good.

I walk to the store, if there is one at a convenient distance.

I run from my front door to exercise.

I'll mix concrete in a wheel barrow, when possible.

Even hang clothes on a line occasionally.

When we were young, our cottage had no electricity, no plumbing, just a hand pump in the kitchen.

At the island there's no TV, but we do have wi-fi, electricity, telephone and plumbing, imagine that!

Even my thought processes are old, struggling to keep up with the improvements.

The most advanced programming is only a computer language which allows me to write HTML.

Photoshop which allows me to draw on the computer screen, and paint directly in the processor.

Almost the same as tracing paper and colored pencils!

Yes, we won't know what it will be like in 100 years!

The future is in the "Black Swan's" future.

We cannot predict anything, so why do I write this? Because I am fallible.

The new green world can be written by: Glen Small; Terry Glassman; Dan Sturges; Jussi Timomen and Ahde Lahti.

Solar voltaic (clear as part of the architecture, not an add on) with static cleaners will dominate the power industry.

Energy will not advance without law demanding the effect.

Future will have no: parking lots, individu-

al cars, or fleet cars.

TV will be on demand only, the networks will fold.

Movie theaters will serve food and alcohol, as a vehicular condiment.

Bars will be the center of social interaction.

Restaurants will serve all food, weight loss portions, private kitchens will disappear.

Neighborhoods will walk to eat.

Grocery stores will be obsolete.

Buses will pick us up at our domiciles.

Homes will be only individual cells.

High speed solar electric trains (pulse engines) will dominate, air travel is obsolete (too much air pollution).

Oil companies and large agro-farms will fold when the government subsidies stop.



When today is  
Enjoy your world  
Life is a clock but  
we reset it  
Each morning  
Look to the joy  
The thoughts  
They are never  
Tomorrow





A set is only a wall or two.  
A set is a story folded in surfaces.  
It cannot talk but does communicate.  
Design is best rendered from life.  
Not alone but from within.  
Lines define, lines trace, give meaning.  
Lines added, concepts develop, intersections  
join.  
Most texts have been too dry to actually en-  
joy the material.  
This one needs to be about finding one's  
self, thereby doing what you want, design  
or whatever.  
Start out with the line, the mark.  
Develop it into the concept.  
Take the concept and show it reflected into  
the life cycle, where it can grow.  
Most of us force the idea of design, it  
should be a free thing. Where and how  
should the training happen?  
Can it develop through very simple truths?  
Does it need the complexity of the most mod-  
ern writings?  
Is it near the abyss?  
Is it accessible to the ordinary individual?  
As in "Pattern Language," can it simply be a  
set of questions, so exhaustive that all de-  
sign is covered and actually finished?  
Set up a list of problems and their ap-  
proach.  
Make it on the edge of teaching, that is:  
one doesn't know that there is anything be-  
ing taught.  
Novel of design.  
As Ran was a translation of King Lear.  
Most people, have "frozen desires" those  
which can no longer be satisfied.  
People want to be recognized for their work,  
their personalities.  
They in the end have such high needs that no  
one can reach their expectations.  
Designers have to realize this as the first  
prerequisite of their product.

The olives taste so good, three at a time,  
right out of the jar.  
There is almost no need to even mix the  
drink.  
There is a sense of pilfered innocence,  
reaching into the star jar and dipping my  
fingers into the brine to fetch up a bunch of  
green pimento stuffed olives.  
I occasionally search the liquid for the  
floater, the alive which has become pickled.  
I didn't want to start out this way, it was  
the evolution over years which lead to this  
jar.  
I just finished "Travels" and found that I  
needed to scream out loud, this may be a  
scream.  
It may be a raspberry in the crystal cathe-  
dral.  
It is me.  
There is a language which I cannot express  
in all my paintings, there is nothing like  
this in two or three dimensions.  
It could be a game, the war, the arcade game  
played with the fingertips while the eyes are  
closed.  
Should I correct all the mistakes?  
I cannot continue with my eyes open, there  
is a dream-like feeling which cannot live  
within me, it needs a keyboard, it needs its  
own life.  
I have opened "Koko", I actually didn't want  
to buy it, I was not going to be caught up  
in another's war.  
Mine was sufficient.  
This is not about the real life things, it  
is about what is not here.



There are certain things that cannot be changed, therefore, one should attack the movable items only. Of the items which can be affected, there are very few which will affect my work. Where do I start?

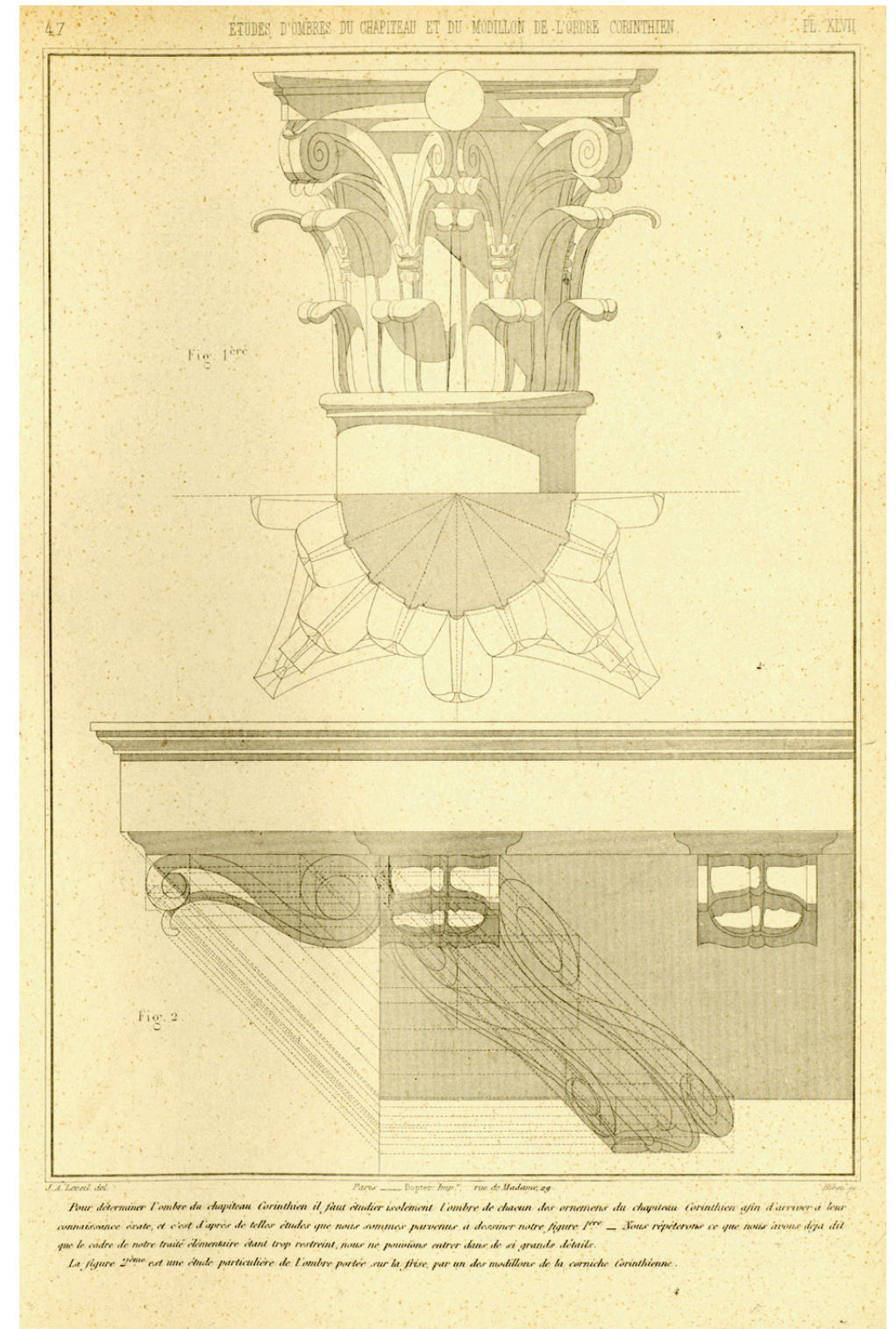
The easiest is to change a physical thing, make it into another. A new item has to have a concept that will resonate and that realization in form will be challenging. Anything can be built, but a concept cannot generate itself, the mind has to enjoy it first. The hardest is to change a concept, because that is how we stay the same, the protection of self. This is a small question, which I noticed in a dream: How can there be a surprise in any dream, the mind is going forward, how can it surprise itself? When I count backward, I pre-think the next number before getting there, therefore, how come the mind doesn't pre-cog the surprise? Is that the same with new concepts, the mind can surprise us? Maybe this is a new idea in itself and should be developed?

Given that a new art project develops, how is it distributed. Maybe that is premature, one shouldn't design for production and distribution, only for self. I'll try that! What do I do? Do best? What do I want? To Do? Where is my mind? How can I access it? Is that the route? Under which synapse is it hiding?

An easier way: write something, then illustrate or sculpt the process and the product. Create words to develop the physical. The problem is now started: where to go next?

Perhaps I should consider a riddle, and enigma, something which has the potential of a solution, but has no one answer. Not a treasure hunt, but one that exists in

the viewer's mind alone. The next step is through the art itself, like a self referential drawing by Vignola:



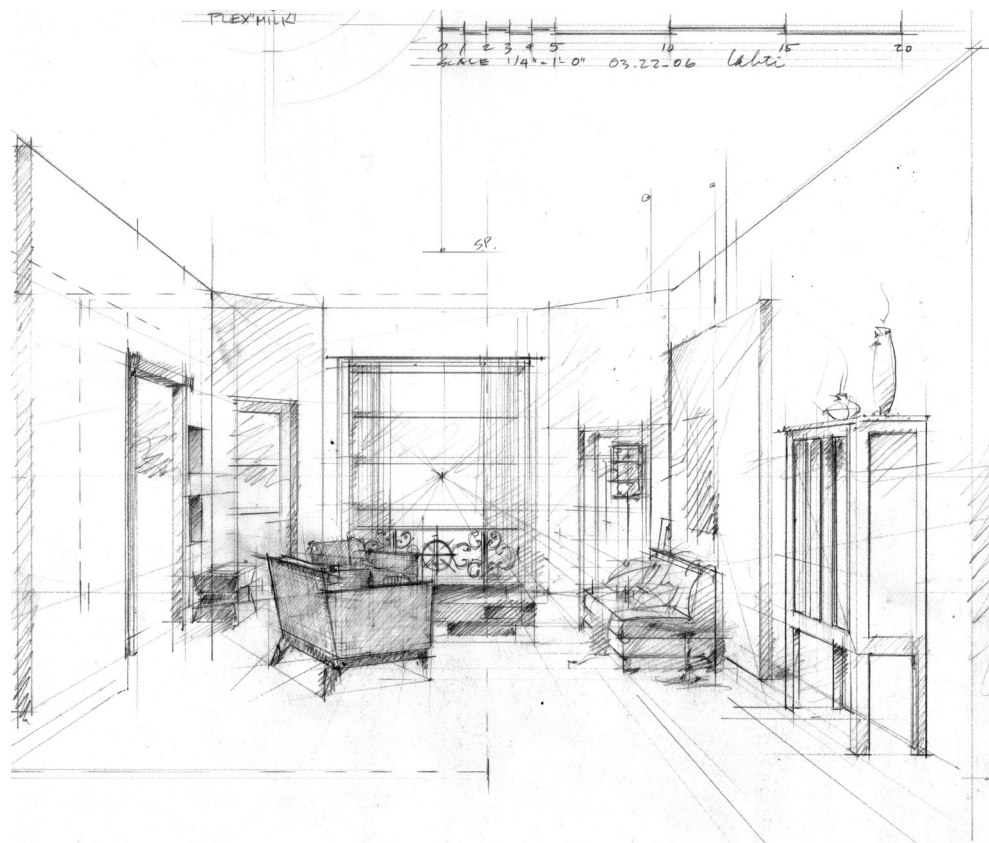


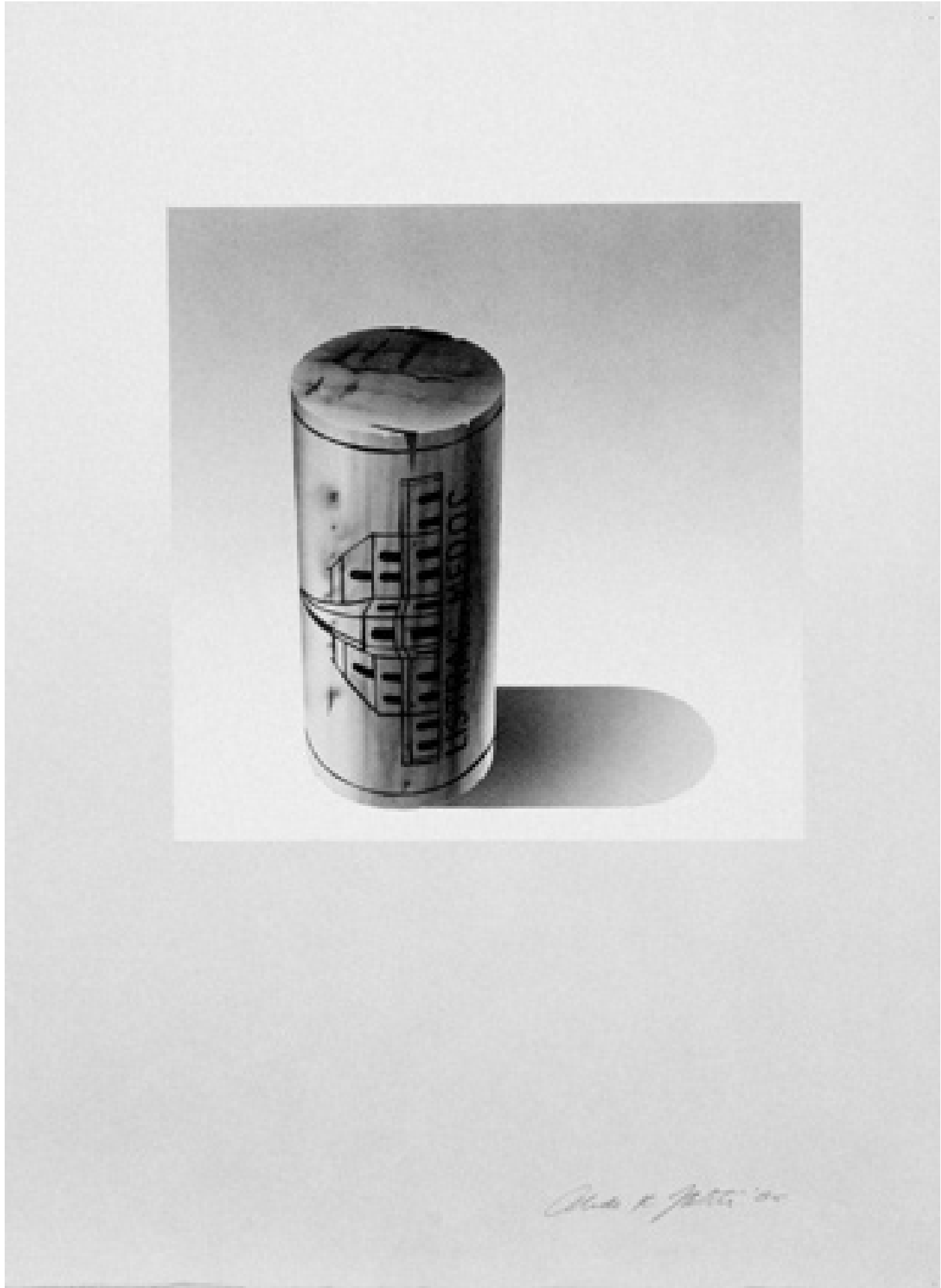
*Chopsticks*

The object here is clarity through plan and elevation, but it can represent complexity. A story: My Uncle Uolevi was a draftsman at Willow Run during the war, his drawings were reviewed and measured by him alone, but at times the foreman would uncover a drawing a measure it without permission of the draftsman. One guy put all the sections over one another, not spread out over the longitudinal section (in different colors) so he alone could measure it (it probably acted as job insurance). Now that is an idea!

Plane and simple, plan and elevation, above. Next a complex perspective:

Now these two images increase in complexity, but do not increase in concept, other than the difference between perspective and elevation, which is actually extreme. The referencing is within the drawing, can or should it be outside? There is the problem of involvement, I can enter a novel for two weeks and enjoy every minute, I can read history for two weeks and have a hard time opening the pages, I can view a painting or sculpture in a few minutes and that is it. Music is lasting but it goes away after hearing, except in the learned repetition.





All efforts should be made to instill confidence and motivation within the student, not pressure from outside which causes the student to perceive himself as a loser. The locus of control has to be internal, within the student. Failure comes from putting the locus outside, "bad luck", etc. The latest problems have or problem statements have created a lack of direction within the first year students as a whole. They perceive the workings as a mystery, which one waits for. Their energy is not directed toward finding the solution, if one did work ahead, the next step would just wipe out all the previous work. They are now lacking the drive to work, there has been a steady regressing, hopelessness. The mask project even though it looked good, to see the repetition, in the end there was not the meaning which was sought, the pure abstracted form. It lacked the meaning which may be put into architecture through: context, history, light, structure, the only meaning came through program. The meaning was limited, it did compare various different elements, ie., Greek vases, their own faces and a very complex system of rules of translation. It is desired to have a limited program for first year students, but I would prefer more traditional structure.

There was no emphasis put on site, structure environmental periodic events, it just became a program, follow the program. This is just a clarification of a previous note, there was a use of site, but to me it seemed irrelevant, one didn't have any criteria to make decisions as to which area of the site had a perceivable effect on the form. Each step was like guessing the distance from spot "x" to the wall and then carrying it out to 10 decimal places. The accuracy was there, but the meaning didn't connect to the student. One couldn't come from the

outside and crit the assignment, the shapes were there but they were insignificant. I am having misgivings about myself as a teacher, as a designer, maybe I am so far out of the mainstream that I cannot understand.

Formal design, "form" without purpose is hard to understand. Each student eventually is responsible to himself. He has to stand on his own, not in line.

Teaching under a curriculum driven program assures that the material will be the same for each successive class, at least that is the goal. The question is, will the material be presented in the way that the teacher could do best?

Teacher driven programs get the best out of the teacher, but fluctuate with each individual and with the thoughts that the teacher has at that time towards education.

Most of the present work of the first year classes seems to be toward the surface treatment, the skin. Very little has gone into the structure, organization or light. The skin has been developed within a context, therefore, one could say the the context can be expanded and the course then has enough so the student will gain what is ultimately needed.

"At the heart of America is a vacuum into which self-appointed saviors and artificial creatures have rushed. They pretend to be leaders, and we - half out of envy and half out of longing - pretend to think of them as leaders." pg. 47\*.

"...our deepest human nature to respond to architypal image..." pg 47\*. "The result is that ethics have been reduced to one fundamental moral question: 'Will it sell?' ... the economic crises that are at the root of the transformation of the Eastern bloc may only be a few months or years from our debt-ridden shores." pg. 48.

\*Ian Mitroff and Warren Bennis in The Unreality Industry in and article by Jerry Snider, Magical Blend

Is the process of life always the quest for new thought, difference in solution, or is it to understand life? And in doing so, are new insights gained? Life is complex, therefore, the study of life should seek to make it understandable, there is some merit to throwing twenty balls in the air, with the hope of only catching one, rather than throwing one with or without the guarantee of even catching that one. Stream-of-consciousness in education may bare fruit.

Will the study of mask/invisible city create the knowledge within a student to tackle a problem on his/her own and come to a solution or the feeling of fulfillment?

I cannot understand that which I haven't ordered; one form of order is writing, and other is visually diagramming it or at least pushing it into a real "form." Not the abstract, not the rapidly, ever changing "form" in thought. It is too variable, all combinations are available, I need to sort out one item at a time, keep it clear and then "set it down" in visual form, where it resides forever as one concrete entity, not the "could-be" variables.

Form is singular

"Any single germinal form is pregnant with many different possibilities, but the greatest of painters will never be able to actualize more than one of them at a time." pg. 160, Painting and Reality, by Etienne Gilson.

Art must be tangible

"Art is made up, not of the artist's intentions, but of works of art.... In order to





exist at all, a work of art must be tangible. It must renounce thought, must become dimensional, must both measure and qualify space." pg. 3. Henri Focillon: The Life of Forms in Art. 1948, George Wittenborn, Inc. N.Y.N.Y.

I go back to old ideas, rework them, play their game again, refine them, but when I go back, the ideas have had a visual form. Very seldom do I go back to written ideas, excepting in this instant where the format is written, therefore the form is written. The writing is an immediate ways to solve a problem which has no graphic equivalent. If it has a graphic product, diagrams, drawings, paintings, Venn diagrams, then the logic may evolve faster. On page ten there is a quote from Einstein, which addresses this very issue.

Does the identification with and object; a city grid; a system of overlays actually create "form?" Yes, it creates form! But is it responsive to the programmatic needs of architecture? I think not. It seems that it is the seed that lives for itself, is an end /and beginning which needed no client relationship. The "client" is self, in the case of the student, the "client" is the "written-program," the product is the "written-program," there is no uniting site, self and program. Well, I have to say all the attributes are there, but each has been abstracted so that it no longer has anything which was contextual unto itself. The axis lines of a problem (project 1) are then superimposed on a set of coordinates chosen without contextual meaning but from luck.

There-in lies a possible problem. If the locus of control is perceived to be outside the designer (student) then his/her feeling of control is lost; therefore, he may play

the game only to get to the next game, not to win, not to understand, not to remember, not to incorporate into his/her vocabulary as a system of information processing.

If we ask the students to solve a new problem, will they use "our" system or throw it out and regress to some pre-existing, pre-education method?

Another idea is that there have been many faculty meetings on this subject, but in general they have been directed toward implementation and understanding how the class is to work, not really open to the end goal.

I have said that there are missing links in the design process during this paper: environmental, psychological, physiological, anthropometrical elements or issues. If one is to add these issues which used to be part of the curriculum, where does one go? Where does the debate enter into the conversation of curriculum? We have no forum for discussion.

Form is itself

" We are always tempted to read into form a meaning other than its own, to confuse the notion of form with that of image and sign. But whereas an image implies the representation of an object, and a sign signifies an object, form signifies only itself. And whenever a sign acquires any prominent formal value, the latter has so powerful a reaction upon the value of the sign as such that it is either drained of meaning or is turned from its regular course and directed toward a totally new life. For form is surrounded by a certain aura: Although it is our most strict definition of space, it also suggests to us the existence of other forms... Form has meaning - but it is a meaning entirely its own, a personal and specific value that must not be confused with

the attributes we impose upon it. Form has significance, and form is open to interpretation.... fundamental content of form is a formal one. Form is never the catch-as-catch-can garment of subject-matter. No, it is the various interpretations of subject-matter that are so unstable and insecure." pgs. 3-4. Henri Focillon: The Life of Forms in Art. 1948, George Wittenborn, Inc. N.Y.N.Y.

Each object will by its nature has a suggested environment. If the environment and object can interact then a new level of communication can be achieved.

Context / form

"The form is a part of the world over which we have control, and which we decide to shape while leaving the rest of the world as it is. The context is that part of the world which puts demands on this form; anything in the world that makes demands on this form is context. Fitness is a relation of mutual acceptability between these two." p.19, Notes on the Synthesis of Form, Christopher Alexander, Harvard University Press, Cambridge, 1977.

It is not enough to look at form, it is not an isolated event. Context in every case is interlocked, it cannot be separated. We will not be concerned with the subject matter, but in the form/context relationship, where subject is present but not dominating the piece of art.

This next quote may seem out of place, but it seems to define a universal form. By looking at form one has to also see that it is not the only and limited domain of man.

Form

Vicomarocote  
in bicicletta



1955/1956

"The form, then of any portion of matter, whether it be living or dead, and the changes of form which are apparent in its movements and in its growth, may in all cases alike be described as due to the action of force. In short, the form of an object is a 'diagram of forces', in this sense, at least, that from it we can judge of or deduce the forces that are acting or have acted upon it: in this strict and particular sense, it is a diagram - in the case of a solid, of the forces which have been impressed upon it when its conformation was produced, together with those which enable it to retain its conformation; in the case of a liquid (or of a gas) of the forces which are for the moment acting on it to restrain or balance its own inherent mobility. In organism, great or small, it is not merely the nature of the motions of the living substance which we must interpret in terms of force (according to kinetics), but also the conformation of the organism itself, whose permanence or equilibrium is explained by the interaction or balance of forces, as described in statics." p.11, On Growth and Form by D'Arcy Thompson, Cambridge University Press, 1971[first printing 1917]

Art must have a maker / capacity

"Man does not think with his hands, but the intellect of a painter certainly thinks in his hands, so much so that, in moments of manual inspiration, an artist can sometimes let the hand do its job without bothering too much about what it does.... Art is exclusively concerned with things that come to be because there is, in their maker, an acquired capacity to make them." pg. 52-53 Painting and Reality, by Etienne Gilson.

In a totally different context, one may consider that a drawing or a painting is in

itself the work of art, the representation of a reality is not as important as the fact that it is itself a form, the form, the only work of its kind.

Art is form and content

"A work of art is an attempt to express something that is unique, it is an affirmation of something that is whole, complete, absolute.... And a work of art is ... both matter and mind, both form and content." pg. 1, Henri Focillon: The Life of Forms in Art. 1948, George Wittenborn, Inc. N.Y.N.Y.

Drawing is neither a presentation nor a production, it is an expression of the intention. In that notion it is only what is intended.

The clarity of the intention is transmitted through the drawing. The drawing may stand alone, or it may be juxtaposed to some other thing, which imparts its meaning to the original intention by its proximity. The elements which make a statement are then compressed, as with a telephoto lens. Space is removed. It, with compression, loses its dimension in order to overlay information.

A work of art is the measure of space

"...the study of a work of art, we must... isolate it...For art is made primarily for sight. Space is its realm - not the space of everyday life, say, a soldier or a tourist - but space treated by a technique that may be defined as matter and as movement. A work of art is the measure of space. It is form, and as form it must first make itself known to us." pg. 2, Henri Focillon: The Life of Forms in Art. 1948, George Wittenborn, Inc. N.Y.N.Y.

This cannot be a theory course, it must be a course where there is a product, a piece

of art, the form. It cannot happen in the mind. We must create the subject / content. I have given other classes, where the emphasis has been on the acquisition of skills. When they were conducted in the form of a demonstration, I feel that they missed the commitment to learn. One can learn from a lecture, but it is absorbed when it is put into practice.

On form

"... forms are not their own pattern, their own naked representation. Their life develops in a space that is not the abstract frame of geometry; under the tools and at the hands of men it assumes substance in a given material. It is there and not elsewhere that form exists, i.e., in a highly concrete, but highly diversified world. An identical form keeps its dimension, but changes its quality according to the material, the tool, and the hand. A text does not change because of the different papers on which it chances to be printed: the paper is but the support for the text. In a drawing, however, the paper is an element of life; it is the very heart of the design. A form without support is not form, and the support itself is form. It is essential, therefore, to bear in mind how immense is the variety of techniques in the genealogy of a work of art, and to show that the principle of all technique is not inertia, but activity." pg.15. Henri Focillon: The Life of Forms in Art. 1948, George Wittenborn, Inc. N.Y.N.Y.

The goals need to be modified to talk to the individual, we are in the end, not a class but a group with individuals. Each one of you needs to gain what you can and accept what you need.



On seeing

"I became really appalled at the teachings of the schools, at the set formulas and the assumptions of divine right, and I took it in my head, at that unsettled time, to appeal to my own judgment. With my savings (from my first building), I went on a journey through several countries, far from the schools, and, earning my living in practical occupations, I began to open my eyes... When one travels and works with visual things - architecture, painting or sculpture - one uses one's eyes and draws, so as to fix deep down in one's experience what is seen. Once the impression has been recorded by the pencil, it stays for good, entered, registered, inscribed. The camera is a tool for idlers, who use a machine to do their seeing for them. To draw oneself, to trace the lines, handle the volumes, organize the surface... all this means first to look, and then to observe and finally perhaps to discover... and it is then that inspiration may come. Inventing, creating, one's whole being is drawn into action, and it is the action which counts. Others stood indifferent - but you saw !" p. 30,31 [Maurice Besset, Who Was Le Corbusier?, Geneva, 1968, p.11, and Le Corbusier, My Work, London, 1960,p.77] Le Corbusier and the Tragic View of Architecture by Charles Jencks

On recognizing misfits

"In the unselfconscious system the individual is no more than an agent. He does what he knows how to do as best he can. Very little demand is made of him. He need not himself be able to invent forms at all. All that is required is that he should recognize misfits and respond to them by making minor changes. It is not even necessary that these changes be for the better. As we have seen, the system, being self-adjusting, finds

its own equilibrium - provided only that misfit incites some reaction in the craftsman. The forms produced in such a system are not the work of individuals, and their success does not depend on any one man's artistry, but only on the artist's place within the process... A man who sets out to achieve this adaptation in a single leap is not unlike the child who shakes his glass-topped puzzle fretfully, expecting at one shake to arrange the bits inside correctly. The designer's attempt is hardly random as the child's is; but the difficulties are the same. His chances of success are small because the number of factors which must fall simultaneously into place is so enormous." p. 58,59, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

Cognitive burden

"The dilemma is simple. As time goes on the designer gets more and more control over the process of design. But as he does so, his efforts to deal with the increasing cognitive burden actually make it harder and harder for the real causal structure of the problem to express itself in this process." p.73, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

Diagram

"The starting point of analysis is the requirement. The end product of analysis is a program, which is a tree of sets of requirements. The starting point of synthesis is the diagram. The end product of synthesis is the realization of the problem, which is a tree of diagrams. The program is made by

decomposing a set of requirements into successively smaller subsets. The realization is made by making small diagrams and putting them together as the program directs, to get more and more complex diagrams. To achieve this we must learn to match each set of requirements in the program with a corresponding diagram." p.84, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

Requirement diagram

"A requirement diagram becomes useful only if it contains physical implications, that is, if it has the elements of a form diagram in it. A form diagram becomes useful only if its functional consequences are foreseeable, that is, if it has the elements of a requirement in it. A diagram which expresses requirement alone or form alone is no help in effecting the translation of requirements into form, and will not play any constructive part in the search for form. We shall call a diagram constructive if and only if it is both at once - if and only if it is a requirement diagram and a form diagram at the same time." p.87, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

Prevent misfit

"A design problem is not an optimization problem. In other words, it is not a problem of meeting any one requirement or any function of a number of requirements in the best possible way (though we may sometimes speak loosely as though it were, and may actually try to optimize one or two things like cost or construction time). For most requirements it is important only to satisfy them at a level which suffices to prevent misfit between the form and the context,

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and to do this in the least arbitrary manner possible. This is a strictly binary situation." p.99, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

#### Personal flavor

"Even if we try to design something for an entirely new purpose that has never been conceived before, the best we can do in stating the problem is to anticipate how it might possibly go wrong by scanning mentally all the ways in which other things have gone wrong in the past...The fact that the design process must be viewed as an error-correcting process has further consequence. The errors that seem most critical to one person will not be the same as those which seem most critical to another. Any list of errors or misfits, which are to be removed, therefore necessarily has something of a personal flavor." p.102, Notes on the Synthesis of Form by Christopher Alexander, 1977, Harvard University Press, Cambridge.

Design cannot function as an isolated set of facts and ideas, each is responsible to the whole, and if the comparison is shallow the layers of meaning are stripped of any value. We have stressed in the class that we are creating new methods of thought, is it really thought or dogma, in that it takes the decision away from the student, he/she is only a machine, and will not develop the inner strength to find the form within him/her.

Students ask questions, how do I simplify to basic geometric shape?

1) The first thought was that you have a complex shape and if you know the ideal to which you are striving, then interpolate between them. I did an example on the com-

puter, by merging (in 20 to 30 steps) two different drawings. That was a pure mathematical answer to the problem. It doesn't necessarily stretch the student very far. But it does suggest that there are answers, that it is not a world of ether.

2) Another thought was to generate drawings, because they have drawn each element, their left side has it down, but the translation to right side has not worked, it has not found form. No study of spatial relationships. I've suggested that each just draw, light/dark, look for form, it will be obvious when you see it, but it will not happen in the mind, it must happen in in real time and space.

3) Solid models are a way to visually chip away at an unknown form, paper constructions are too slow, need to be able to see 3-D, see variations, need to recognize when it is there. Is it viable, as a premises, let alone as a process. If one cannot trust the whole system; then, no matter what is done, it lacks the feeling that it is "right" or even on the right track.

I've had the students dent the paper, blind emboss, look for the accident to help put form together. Just as with the disparate objects that they are now working with. I've also suggested solid wood, clay and even Styrofoam.

A few of the students have objected to the use of plastics, The world is a great concern that they find missing in our teaching, earth stewardship. They feel that it has to be learned in the beginning and carried out throughout the program.

If the students feel like they are not learning then it is a matter of disconnected events. There maybe a good idea, but if it is not perceived then it is a serious problem.

If the rented space 6000 sq. ft. is not

incorporated into the notion of space, then it has no value. The theater piece as it is going will have a minimum of impact. There is no story line, no choreography, no theme within the event. It has no goal at this moment. The end result is still being developed.

Invisible city is not adding to the construct. The underlays, overlays, all just add up to texture, if the images are read then there is a symbolic meaning. The whole, however, may just be a collage of textures.

From the planning discussions, aimed toward keeping the first year tuned into each-other, G. Paige and C. Chu have discussed the distancing from the object, a need to separate oneself, therefore, technology isn't important, or not the end goal. J. Clagett said he was looking toward the rational, G. Paige said he was looking for the irrational, transnational. I don't think that the process is understood, something is missing in this class, they are working in the dark, which is counter productive. The need to keep the students off guard, to keep them from getting to the end. If we slow down the mental processes, to keep from making those potential leaps, the leaps may have included intuition, genius or the blind leaps into the world of the mundane, the known. This is definitely the self-conscious process at work (look at page 14). Can the class be diagrammed? Look at logic and the goal. Premises to a conclusion. Is form responsive to environment? Space needs? The organization of spaces? Historical reference? Constructed mathematical axis? The question: how can there be meaning when the context has not been studied? No demographics, no transportation, no landmarks, no boundaries. Look back at the approaches of





K. Lynch. Find meaning and use it to solve problems, that is too pragmatic, but it is something that I understand. Ian McHarg also has a method to evaluate and make decisions. We haven't shown the students where to begin to create form. Their objects will just exist in space. Relationships are only superficial at this moment.

Rudolph Arnheim quotes Albert Einstein, in a letter to Jacques Hadamard, in Education of Vision, by Gyorgy Kepes, " 'The words or the language as they are written or spoken do not seem to play any role in my mechanism of thought. The physical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be 'voluntarily' reproduced and combined... The above-mentioned elements are, in my case, of visual and some of muscular type. Conventional words or other signs have to be sought for laboriously only in a secondary stage, when the mentioned associative play is sufficiently established and can be reproduced at will.' " Arnheim adds, " 'If Einstein's procedure is representative of intelligent reasoning, we may be strangling the potential of our brainpower systematically by forcing our youth to think primarily with verbal and numerical signs.' " These thought quoted from, Design of Cities, by Edmund N. Bacon 1974, pg. 48.

Does the use of mechanical drawing come under the analytic or holistic approach to thinking? Should architecture students be pushed to use methods which do not depend on verbal and numerical signs?

"Thank God there are no free schools or printing;... for learning has brought disobedience and heresy into the world, and printing has divulged them... God keep us from both." Sir William Berkeley, Governor

of Virginia, d. 1677, pg.2\*

"In our society, as in others, we find that there are influential men at the head of important institutions who cannot afford to be found wrong, who find change inconvenient, perhaps intolerable, and who have financial or political interests they must conserve at any cost."

"Hemmingway replied, 'Yes, there is. In order to be a great writer a person must have a built-in, shockproof crap detector! ' " anti-entropic force, pg.3\*

"...Alan Watts has noted: 'Irrevocable commitment to any religion is not only intellectual suicide; it is positive unfaith because it closes the mind to any new vision of the world. Faith, above all, openness — an act of trust in the unknown.' "

Clock, 3000 years represented by 60 minutes.

9 min. left;	printing press
3	telegraph, photography, locomotive
2	telephone, rotary press, motion pictures, automobile, airplane and radio
1	talking pictures
10 sec. left	television
5	computer
1	satellite communication
1/2	laser beam communication

"It implies that the critical content of any learning experience is the method of process through which the learning occurs." "It is not what you say to people that counts; it is what you have them do." pg. 19\*

"Mostly, they are required to remember. They are almost never required to make ob-

servations, formulate definitions, or perform any intellectual operations that go beyond repeating what someone else says is true." " Constantly, they must try to supply 'the Right Answer.' " These were published notes on student performances, the systematic approach to understanding what has happened in the semester.

Labels

"enquiry method... 'the Socratic Method.' "\ "inductive method, discovery method, inquiry training, the hypothetical mode" pg. 26\*

"the inquiry method is very much a product of our electric age. It makes the syllabus obsolete; student generate their own stories by becoming involved in the methods of learning." pg.29\*

"all authorities get nervous when learning is conducted without a syllabus." "Sequential curricular" similar to mass production. pg.30\*

\*Teaching as a Subversive Activity , by Neil Postman / Charles Weingartner, 1969

Each semester the class should look at a world problem and build the prototype(s) which address the solution. One semester each year will be allotted as the preparation for the research.

Construction/destruction

Wind/doldrums

Fire/cold

Wind/stability

Movement/quiet

Interference pattern recognition.

The actual course should look at world is-



sues but use opposites to look through the problem.

Hunger  
Drought  
Famine  
Housing  
Welfare  
Elderly  
Mental Illness  
Stress

There seems to be several categories of projects, those that are natural or nature events, periodic events and those which are environmentally induced and those which are internally induced. Study one or a combination each year.

#### The Teacher

"The work of the students should not be directed to the solution of problems, but rather to sensing the nature of things. But you cannot know a nature without getting it out of your guts. You must sense what it is, and then you can look up what other people think it is. What you sense must belong to you, and the words of teaching must not in any way be in evidence, so completely has it been transformed into the singularity." Between Silence and Light , Spirit in the Architecture of Louis I. Kahn by John Lobell, pg.,52

#### The Architect

"I believe it takes a long time to be an architect; it takes a long time to be the architect of one's aspirations. You can become an architect professionally overnight. But to feel the spirit of architecture from which one makes his offering takes much lon-

ger.

And where does the architect sit? He sits right there; he is the one who conveys the beauty of spaces, which is the very meaning of architecture. Think of meaningful space and you invent an environment, and in can be your invention. Therein lies the architect." Between Silence and Light , Spirit in the Architecture of Louis I. Kahn by John Lobell, pg.,50

#### Knowledge

"Everybody is not equally talented. They are all marvelous, yes, but not equal. There is no person without talent. Talent prevails everywhere, but the question is in what way your singularity can blossom, because you cannot learn anything that is not part of yourself.... If I listened, I could not write. If I wrote, I did not listen .... If you are crowded with that which does not belong to you, you will forget it; it will never be with you, and you will lose the sense of your worth." Between Silence and Light , Spirit in the Architecture of Louis I. Kahn by John Lobell, pg.,16

Through the years I have tried to do "hands-on" projects, but they do not work well at all; there seems to be a construction mentality that sets in, they start at 1:00 and quit at 6:00 because there is a need to lock tools away and/or the light fades in the winter. Here are a few lines which are indirectly related to the change of existing structures.

#### On unselfconscious process:

"Unselfconscious cultures contain, as a feature of their form-producing systems, a certain built-in fixity – patterns of myth, tradition, and taboo which resist willfull change. Form-builders will only introduce

changes under strong compulsion where there are powerful (and obvious) irrations in the existing forms which demand correction." Notes on the Synthesis of Form, Christopher Alexander, pg. 48

#### Equilibrium

"The basic principle of adaptation depends on the simple fact that the process toward equilibrium is irreversible. Misfit provides an incentive to change; good fit provides none." Notes on the Synthesis of Form, Christopher Alexander, pg. 50

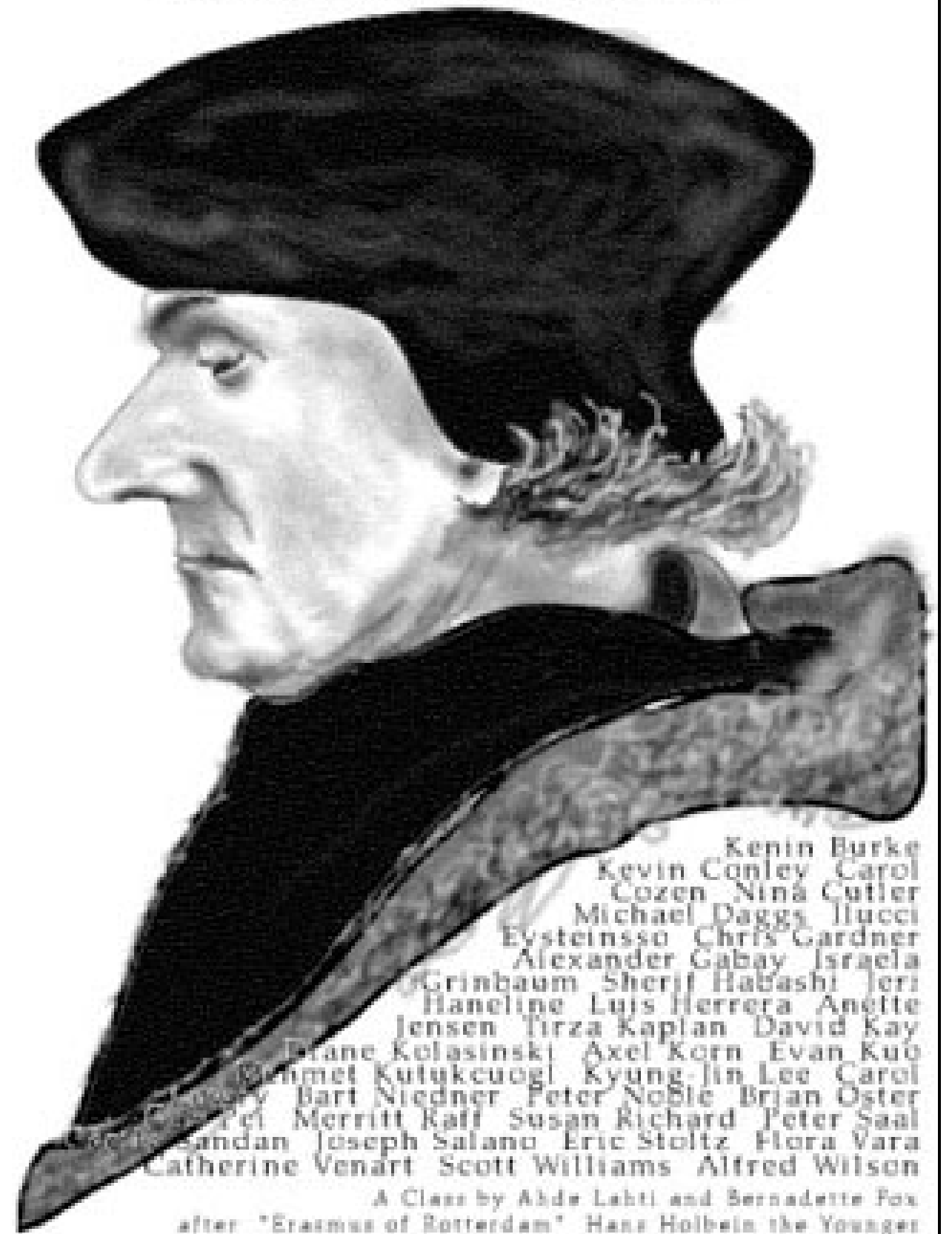
#### Feedback

"The direct response is to maintain the good fit of dwelling forms while the culture drifts, it needs a feedback sensitive enough to take action the moment that one of the potential failures actually occurs... However, the sensitivity of feedback is not in itself enough to lead to equilibrium. The feedback must be controlled, or damped, somehow...Such control is provided by the resistance to change the unselfconscious culture has built into its traditions...they make the system viscous." Notes on the Synthesis of Form, Christopher Alexander, pg. 51

#### On selfconscious process:

"The selfconscious process is different. The artist's selfconscious recognition of his individuality has deep effect on the process of form-making. Each form is now seen as the work of a single man, and its success is his achievement only. Selfconscious brings with it the desire to break loose, the taste for individual expression, the escape from tradition and taboo, the will to self-determination...To achieve in a few hours at the drawing board what once took centuries of adaptation and de-

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velopment, to invent a form suddenly which clearly fits its context – the extent of the invention necessary is beyond the average designer.” Notes on the Synthesis of Form, Christopher Alexander, pg. 59

Education is a product of the courses taught. We are seen in the product of our students. Education is our students, as they are still themselves.

Education needs an expansion in the teaching process, where interdisciplinary groups exist. We can look at former models of schools which introduced arts and crafts, architecture and design, and then come up with a model of our own. I believe that certain disciplines are healthy for young designers; music, art (sculpture, printmaking, painting, drawing), design (graphic, industrial), photography and architecture.

A curriculum which stresses problem solving with people and mass produced items. It would take the concept of the “product” through to the prototype of the item itself. There would be an emphasis on the machine produced item (technology) versus the hand crafted item. The scope of the projects could range from an individual user item, to transportation systems, to the mass produced housing, to the hostile environment structures which the Institute for Future Studies (IFS) has explored. The range of mass produced items covers the static to the dynamic: the stationary to the mobile. New trends have created new methods for producing the item, the old way set up production for X number of parts, much like a print edition; but the latest methods can create many different items on the same set of tools, essentially “one-off” items with mass produced speed.

The thought is that many of the students might like to try a studio which is concentration on one art at a time, ie; music, dance, painting, drawing, sculpture or printmaking. The idea is; there would be a series of “skills courses”, which concentrate on one art per trimester. A painting studio could take the students through a series of paintings, working with history and concept, creating a gallery showing at the end of the semester.

Another problem would be the facilities for some of the arts. Painting and Drawing have no facility problems, but Sculpture and Printmaking would require special set-ups. It would be interesting to set up two of the programs, Painting and Drawing, then see how well they work out. I think that it would be good to set them up as studios, not seminars. The time involvement needs to be there. A seminar or two could also be set up to compliment the studio. This should not be course which intends to integrate art into the architectural vocabulary, it is an autonomous, independent studio.

“When a man buries a pole in the sand, he automatically creates a sundial and begins to mark time. To begin marking time is to begin creating a culture. A pole rises out of the desert sand. El Topo appears riding a black horse. He is dressed entirely in black: boots, pants, shirt, jacket, hat. He carries an open black umbrella.” El Topo, by Alexandro Jodorowsky, 1971, pg. 8

“Like his rational predecessors, Decartes, Leibniz, and Wolff, Baumgarten had faith in the primacy of reason, under the guidance of which ‘clear and distinct ideas’ could be attained and rigorous logical deductions could be made... he was also a passionate

lover of poetry and this presented him with a problem. For poetry, which was in his opinion a ‘perfect sensuous language,’ expressed ideas that were clear without being distinct. Indeed, the idea or representation presented by a poem must be by its very nature confused (i.e., fused into a unity which could be sensuously experienced but not intellectually conceived), otherwise it would not achieve its poetical effect... poetry and the arts differ from philosophy in that they aim at perceptual vividness rather than at conceptual distinctness. But just as we apprehend truth by the use of our higher cognitive faculty of reason, so do we apprehend beauty by the use of our lower cognitive faculty of sensuous perception. In order to make beauty intellegible, however, we need a science of the things we perceive to accompany and supplement the science of the things we know. We need, that is, a science of perception-aesthetics, he called it – as well as a science of logic.” Alexander Gottlieb Baumgarten’s 1735 thesis, Reflections on Poetry: Perspectives in Aesthetics, Plato to Camus, by Peyton E. Richter, 1967, Odyssey Press, pg. 5

“‘Do you know anything about the world around you?’ he asked.

‘I know all kinds of things,’ I said.

‘I mean do you ever feel the world around you?’

‘I feel as much of the world around me as I can.’

‘That’s not enough. You must feel everything, otherwise the world losses its sense.’ I voiced the classical argument that I did not have to taste the soup in order to know the recipe, nor did I have to get an electric shock in order to know about electricity.

‘You make it sound stupid,’ he said. ‘The



way I see it, you want to cling to your arguments, despite the fact that they bring nothing to you; you want to remain the same even at the cost of your well-being.'

'I don't know what you're talking about.'

'I am talking about the fact that you're not complete. You have no peace.'

That statement annoyed me. I felt offended. I thought he was certainly not qualified to pass judgment on my acts or on my personality.

'You're plagued with problems,' he said. 'Why?'

'I am only a man, don Juan,' I said peevishly.

I made that statement in the same vein my father used to make it. Whenever he said he was only a man he implicitly meant he was weak and helpless and his statement, like mine was filled with an ultimate sense of despair.

Don Juan peered at me as he had done the first day we met.

'You think about yourself too much.' he said and smiled. 'And that gives you a strange fatigue that makes you shut off the world around you and cling to your arguments. Therefore, all you have is problems. I'm only a man too, but I don't mean that the way you do.'

'How do you mean it?'" A Separate Reality, by Carlos Castaneda, 1971, pg 5.

"We must use art-artistic activity-like a way. I pick up this white book of matches, for example. I open it and see black matches. When I pick it up and open it, I am a poet. If I am a poet, I make poetry. But if I am a politician, picking up the matchbook and opening it is a political act, right? And if I am John Cage, it is music, a musical game. If I am a dancer, it is a dance. What matters is the way...

what you are."

"TOPP: Alexandro, you once said that you don't put anything between the actor and the camera.

JODOROWSKY; Yes. No aesthetic effects. When I took Corkidi on as photographer, I told him, 'No more aesthetics. Think of yourself as a newsreel photographer. You must shoot a scene directly: between the object and the camera, a straight line. And the camera shouldn't judge, NO opinions. Objective, clinical.'" El Topo, by Jodorowsky, pg. 106, 129.

"Here, in the third critique, Kant described fine art as a form of expression in which the dead body of an object is given life by an artist, animated in a way that presents the artist's soul:

'the soul of the artist furnishes a bodily expression for the substance and character of his thought, and makes the thing itself speak, as it were, in mimic language... attributes to lifeless things a soul suitable to their form, and... uses them as its mouthpiece.' Immanuel Kant, trans., James Creed Meridith, Critique of Judgement, (London: Oxford University Press, 1953), p.188.

Fine art speaks. It is listened to rather than read. Aesthetic judgement depends on the belief that the internal 'voice' attended to when confronted by a beautiful object is common to all mankind and is, therefore, the voice of nature rather than culture. Whereas cultural conventions organize signs that remain in the bodily realm detached from what they represent, aesthetic taste requires complete disinterest in the bodily existence of the object, its utility, function, or purpose. Taste is that encounter with an object where the object is not consumed, not mastered through appropriation, not used as a means to some independent end.

Aesthetic 'pleasure is attained through the suspension of all bodily desire and its 'gratification' in the 'mere enjoyment of sense found in eating and drinking' Ibid., p. 162. To taste is to spit out the object before it is consumed; it is to detach oneself from the object." Postmortem Architecture: The taste of Derrida, Mark Wigley, pg. 158.

"It is the age of steel, and the glitter of steel fascinates. The beauty of the machine is claimed as a new formula which will give results of a permanent order. But this is where error creeps in again. Let us analyze a few of the reasons why this is so, and after that I will give you proof of the sure and encouraging progress of human achievement; so that after saying 'how very disappointing,' we can say 'how very encouraging.'

Let us attempt to formulate the standards of mechanical beauty. If we could admit that mechanical beauty was a matter of pure reason, the question would be settled out of hand: mechanical creation could have no permanent aesthetic value. Each piece of mechanism would be more beautiful than what had preceded it and would inevitably be surpassed by its successors...man's sensibilities intervene... An engineer works out the section...he can choose... you have the intervention of an individual personal taste, sensibility and passion..." The City of Tomorrow and its planning, by Le Corbusier, trans. of Urbanism, by Fredrick Etchells, London Architectural Press, 1947, pg. 67-68.

These last two quotations seemed to shed light on my personal teaching questions, they didn't clear the matter but gave me a notion of where ideas have germinated.





"The design of Inquiring Systems: Basic concepts of systems and organizations" C. W. Churchman, Basic Books, NY. 1971

from Churchman

1. SYSTEM is goal seeking;
2. SYSTEM has a measure of performance;
3. There exists a "client" whose interests are served by SYSTEM in such a manner that:
  - a. the higher the measure of performance, the better the interests are served, and
  - b. the client is the measure of performance;
4. SYSTEM has components which "co-produce" the measure of performance of SYSTEM;
5. SYSTEM has an environment which also "co-produces" the measure of performance of SYSTEM;
6. There exists a decision-maker who, with his resources, can produce changes in the measure of performance of SYSTEM'S components and, hence, changes in the measure of performance of SYSTEM;
7. There exists a designer who conceptualizes the nature of SYSTEM in such a manner that the designer's concepts potentially produce action in the decision-maker, and hence, changes in the measure of performance of SYSTEM;
8. The designer's intention is to change SYSTEM so as to maximize SYSTEM'S value to the client;
9. SYSTEM is "stable" with regard to the designer in the sense that there is a built-in guarantee that the designer's intention is ultimately realizable.

