

# Walters/Walters

they really were around the same time, charles eames, design he actually first started out by designing the molded plywood chairs--

housing and industrial type housing--

a kit of parts, build your own house, change it--that kind of thing

kind of interesting story: at USC when I was studying architecture

Eames, Nuehart and Nuehart--worked after USC grad 1984

worked on IBM computer applications exhibit, 1985-1987

that was where we were really interested in--actually the first thing was this, this was right out of college--points to "buck had just past away 1983--his daughter alegra fuller, moved out archives--initial inventory, massive room full of videotapes, audio tapes, drawings, dimaxian indexes--proposal to do a thorough index, make accessible to the public, felt it had a valuable body of research material that he had done, that was our first project out of schools

then went to work with Donges, Nuehart--systematically studying both charles eames and buckminster fuller, BF gave a real global view, c. eames gave a close up view,

macro and micro world through design--

I would say it was a progression, at USC we focused mainly on history and theory of architectures and als the design development through an architectural project

we didn't spend a lot of time on technical drawings and how to read blueprints, we studied how and why buildings look the way they do

looking at the history books and trying to discover why certain buildings ended up in the history books and others didn't



art and architecture reflect how society sees itself and technological inventions.

when I left USC, I was sort , we were moving away form minimalist interantional style, getting into post modern era with Michael Graves,

although that reflected the times, with the Reagan-era and all the spending--I was coming, I was still moved by the industrial age, I was looking for economy of materials, use of geometry,

when I came across b. fuller and c. eames, it was really like remembering what I always wanted to know

I would say it was a prression and that I was finding a new form of design that really reflected the changes in society and the way things were going

at usc also introduced into computers, in the edge of this whole electronic and computer technology and so I saw that obviously growing and being incorporated into architecture

even a long time ago, bucky was talking about how we have these various technological developments: aerospace might be five years behind the latest in technology, automotive industry twenty five years--hear housing is fifty to 100 years behind the technology, we're still building with technology that was developed 100 years ago--

so I saw all these different changes, started looking at how to incorporate those into architecture

pearce structures started ten or eleven years ago,

I started pursuing these ideas and concepts, that's really how I got into these

I took almost two years off, did all these paintings and models, how does all this work together, tried to figure what buck was talking about.



it was about looking for space to develop this stuff, influenced by eames office. large space, things hanging, vignettes every time you turned the corner

we saw it has a necessity to have a large space, one priority when we moved away from living at USC

we thought that would be where all the innovation was stemming from, it would really be the heart of where things were happening,

just so we could keep our fingers on the pulse of the city, los angeles was sort of the jumping off point,

early man starting in the east, slowly migrating west, now we're at the edge of the western rim, sort of almost bridging this and mixing in the eastern culture

sort of including eastern meditation with technology and innovation

it was funny we just sort of ended up down here



we sort of located ourselves on the edges of the city

L.A. River, Freeway, downtown industrial area

that was really helpful at the beginning because we were looking for scrap materials, as starving artists, things available, you could find equipment or paints, all the supplies you really needed, plus the advantage of being able to salvage

a lot of different things I used to walk around the streets and look through the trash cans, a lot of clothing sweatshops.,

started pulling through all the ties, started finding out the difference between silk and polyester, collected 200 silk ties, made a few art objects out of that,

← rectangles vs. triangles —



sort of a discovery/learning environment

being downtown was such an open environment, you don't really get that in a housing tract, it's all new to us, that whole

living on the fringe, listening to jack kerouac, and trying to absorb that whole, thing, a real soul-searching period. a lot of that started to happen at USC--my fifth year thesis project, center for science and learning, ended up developing a videotape and computer graphics for a learning center, center for science and learning.

how one would go in and use a laser disc computer

saw these as tools that future architects would be using, stepping away from looking into the future, all these things just kept coming together, had all these models built,

after two years of just getting by, well not starving, it was really enjoyable

then I really started to look outside, felt that I had all the tools and I sort of had a grasp of what this whole creative process was, how to initiate a creative development, how to incubate it, nurture it,

I wanted to validate it in the professional world, I was so convinced that what I was doing and what I had found was valid and that it was atypical and very few people were using it

those two guys were influenced by David Thoreau, a whole line of great thinkers and self-educated people

look outside, that's where I came across peter Pearce, low and behold he had worked with eames and fuller

neuhart, donges, neuhart, while there ran across his name


worked with P. Pearce at eames office, so later, when I was looking for a real job so to speak, I contacted him again, he did most of the editing for synergetics, which is where all of buckley's knowledge



once I really sort of remembered all that, I made a direct approach to Peter Pearce, wrote him a letter showed him a portfolio, hired day after thanksgiving, 1989, november.. been there just over a year--

that's really a concious effort also, all this stuff is sort of being reflected in the new physics, this all comes from bucky too--he's the one that really brings together all of the elements of physics, nature and the building industry, making connections between all this things, that allows you to think comprehensively as opposed to linearly

superconductivity--




the reason why he's staying with me is the two atoms in a superconducting chamber how they travel along in tandem, how they are able to meet all obstacles as long as they stay together

it's more than just a marriage, it's gone far beyond that-- whether it last 50 years or not,


studied journalism while I studied architecture, ability to write letter, handle finances,

seeing not that we delegate and separate, but we learn from each other, karen's become more creative and I'm becoming more analytic,

seeing these as counterparts and trying to become whole with each other,



<sup>"supercom"</sup>  
write these things down and talk about them, we're sincere about them as opposed to being serious.



when we tell people, sometimes they laugh and snicker, we do too, we take it light heartedly , but it's something that it's always fun when these incidences come up, we get a joy out of finding these coincidences



we're trying to leave this whole trail, the 50 year experiment is a forecasting document--

it will be up to the rest of humanity to sort of judge whether it was good or not--

studying the geometry, now we're learning how to build with that, the most efficient use of material and time and energy to build a building, a revolutionary technology that's really going to take off some time, pearce structures is a very innovative company

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just in time management--kit of parts systems technology

were you can mass produce these struts fairly rapidly because you have a lot of typical part types.

like this structure over here you have only three part types, so you could really mass produce a bunch of those, with a minimum inventory you could have maximum diversity

once you develop the technology, you'll be able to build either a playground or housing or shelter for the homeless or biosphere II, all with the same part types.

it covers the most amount of surface with the least amount of materials. so that's just one way to contribute to humanity without going out there and saying, no you can't build this, or being a legislator and trying to make rules. instead of changing people, you know we're trying to change the environment

by ;building things more economically, by incorporating computer technology that allows you to build something and walk through it and experiencing it without ever having to build it, that's were we think we're building and participating in the universe.

he's my best employment agency

one way or another

it's no coincidence that I'm able to join him at work, set up a situation so I'm able to have that opportunity

knowing the value of information and knowing how to process it--  
economy of tools

if you conceptualize it, conceptualization is just energy, there's no material mass involved with it, the more you can do with that the less

studying those theories allows us to organize our daily activities

golden gate park, design from dept. of public works in S.F.

whole office involved with biosphere II and other projects

project management and design

bringing the tools with me,

I did a thorough documentation of the whole thing,

the installation, but you know I was really interested in expressing this a process and not just an end process

i documented the whole thing, tracked it through the whole process

put the struts in, tack-weld, then the struts get grit blasted, coat of aluminizing, powder coated, footings are flame cut, punched and drilled, then this is the fixture and set up for the footings, located and tacked, welded, grind off the splatter, the raw footings, grit blast.

side panels, computer controlled--nibble its way around and cut the flat shape, and then these panels get scotch undercoating and then the colors, some of these they had the fraction lens in it,



at the corner near the panhandle, early construction done by a general contractor--do the survey

follow the plans and bolt all these things up,

understand the process as opposed to just the product itself

so this is my first project today

as a tool for documentation delivering the design process, using the computer

also in san francisco, bethel temple--this is a much larger job so I really, you can't really tell

important that we put a document like this to really analyze the design process

space frame--so I explode it and start to analyze it and its different sub-section, 8 sub-assemblies, these will be craned up by themselves.

break it down, give it individual weights,

before we really utilizing cads in the installation process--

they would send out instructions, this is what the installers would go off of, and not really conceptualizing what it is they are putting together

I learned a lot fo this from working closely on the installation of this project, so many different layers on a flat grid, came up with handbook to really put down all the information, three-d views of how the "Perlins" get installed.

the space frames are so information intensive, the computer is being used to make that information more accessible,



I'm really convinced that this tech has not developed yet, because it was too information intensive-- it took months and months to engineer and do all the calculations

all based on 60 degree angles--so it's a different geometry

and the

months and months to develop the

perlins get added on top of the structure--like a joist, something they can screw the material into--we tried to get the contract for the roofing material--

they are not using the regular orthogonal geometry where you use 90 degree angles, these are all based on 60 degree angles, where you use 60 60 60 degrees. different geometry than what contractors are looking at

the tolerances are like 20/1,000 of an inch, as opposed to two or three inches in normal construction tech would be acceptable in some places,

but this is right on the money, quality is built into the project itself

glazing has a film, bolted right on that, extended into

water tight, air tight, each seals has be chacked,

water is thicker than eiar,

but they do it by sections, they'll do this assemp==

so it's really a funny story when you look at this, because everything we talked about and everything I was writing about at school is all coming to fruition--

peter has been doing this stuff for 30-odd years,



maximum diversity, core concept--minimum inventory, maximum flexibility

the first thing you realize is that there really is enough to go around, and we are all here for a purpose. We are not here to do what our sixth grade teachers are here

that's reflected in the structure itself, each one of these are distributing the load equally, the whole thing is dependent on cooperation, integration

her: physically these spans on most traditional structures would require columns running throughout the structure, they couldn't allow that when they have to have every available land,

with the space frame, it was a piece of cake--

this is sort of the physical manifestation of all the concepts that we're talking about, individual identity, cooperating with the whole

we're seeing that

if you're going to have this building for fifty years, you'd want the latest technology, so that in fifty years you'd still be....

it's sort of the same question as why is the government not running--

it's interesting because we're starting to feel these concepts coming about globally--

for all of us to survive, we'll all eventually cooperate

the new physics is talking about wholistic systems, where everything is working together as a system--the end result is greater than the constituent parts,

the behavior of the whole is greater than the sum of the parts--



which is what's happening here, if you'd never  
that's what we're approaching in humanity,  
we're able to network and link concepts--

it's also providing ideas and solutions to the problems globally,  
people in ethiopia can get the same information through satellites  
and computers that anybody could at a university,  
equal distribution

the same principles that happen in space frame design, that's really  
what bucky had been talking about, and I think that's part of the  
reason he was sort of discredited from a lot of the real scientific  
arenas, because he links the metaphysical with the physical and he  
gets into these grand cosmic concepts, as the universe and how  
we're just knotted balls of energy, and there really is no mass, how  
this is really

we are all energy, if you look inside the atom, there's nothing there  
except energy, all this is but a dream, it is all energy, it's how you  
manipulate and redistribute energy is how you get matter and  
form and shape,

that's where bucky is trying to reduce everything to the least  
activity

hanging sculpture in Beaudry plaza--just west of the harbor  
freeway,

citicorp plaza--

an accent piece to the whole cylindrical atrium--

city officials said it didn't meet fire safety--

they incorporated irrigation tubes running through, it's an accent  
piece for that whole atrium garden plaza



pearce has survived and grown on these small add-ons to buildings pieces, entryways and atriums and canopys, but peters heart is in developing a new technology of the world and a new building industry for architects, total space enclosure, he is so far-thinking.

he's into this kit-of-parts systems developing

TJ--he's writing all our software programs to do the analysis of our space frames, he's writing a program that will analyze a situation and come up with a kit of parts that you can as an end result put up--his program, once you define the conditions will describe the geometry that is the most efficient for that system

give you a bill of materials, some type of manufacturing som

the whole thing is generated right on the computer, then it goes to manufacturing process--

the computer can be connected to robotics that produce whatever, blank cutting, welding and powder cutting

working on automating after designing the project--the first application

a major gas company came to us as far as developing a systems technology whereas they want to put these gas stations all over the country,

developing a program where in we would put in the demographics of that area, the region of that area, all the parameters that define a structure, it will define this gas station with a car wash, or with convenience stores or whatever the demographics,

it will generate the most efficient geometry

a mass produced structure that will adapt to whatever region



it's not just looking at the structure itself, it will incorporate passive solar

moving beyond the aesthetics of architecture and into the aesthetics of natural architecture,

peter pearce wrote a book called structure and nature: the strategy for design

he hates architecture, he looks at things not as: this is a beautiful building but as: does it work, and then, does it come out beautifully, and of course it works, is it doing what it's supposed to do,

globally what is this thing, locally what is this thing, specifically what is this thing--  
is this going to be a concrete city--the keep talking about planning this city,

but I don't see anybody considering the city as a whole, nobody's stepping back and

**KAREN:**

so intent on planning and putting in a specific building here and there, which is how we do it,

we usually skirt around the edges of the city, we've taken advantage of how it's planned now

we think we're on the verge of a shift in attitude, once we quit becoming these wasteful, gluttonous people--which I can attribute to the Reagan era--frills and cornices and that whole stuff,

but once we start seeing and recognize that its in our best interest to help these other peoples out

this architecture is going to fit that mold, that will express the new ideas and trends in society

that was a reflection of imitating, (post-modern)



a real void in architecture, people don't know what to build

this is the new architecture

it must be now, KAREN,

peter's done building's and canopies all over the world,

I'm not sure this is the start of it, but it is definitely the beginning.  
I believe this is it, this is probably the start of it

he's really the only person that's developing the technologings

German competitor, Mero System--they have a ball knode system,  
whereas ours is a hinge system

huge German conglomerate--

sort of ornamentation, canopy's and things

sees the need to take that into a complete space enclosure

that's where he's really stepped into these add on pieces

he's not the only one,

they do the german, most of them are the."

They're still concentrated on the structure itself and then have  
somebody else come along and glaze it or whatever,

peter's interested in a complete system.

if we were to get involved with this, set up a complete factory--

Peter will build his house--



housing industry at a fraction of what it costs now

real tinkertoy stuff--

the designers have just been out there--

a direct application of his principles--

a direct application of how this could affect you and me--at least this will be accessible to people and

we've had some setbacks, the people in the corporation, we lost our advocates, it was such a forward thinking project--these new people

national oil company--

like going to biosphere to gas stations--hear enough about them in the news, they are considering that as part of it--so they've had to

I don't think it's hurt them--they are considering those alternative forms of energy

this becomes a whole icon for them, once you drove past one of these space frame structures you would know it's that gas station-

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a curtain wall coming down the side--the glazing system, it's different, it has to be different from the biosphere--

glazing system is different, did get the glazing,

nothing structural or--it's architectural in the sense that it provides and experience, it's just another add-on piece,

a lot of talk about other biospheres--big projects, covering a whole city type of things,

that's where this tech is going to go--talk of a big project in las vegas



some proposal work--entertainment--

aren't just to replace building, projects they are bidding on are huge multi-million projects--

airport hangars, large spans--not necessarily

Mero System or Unistrut--

lung dome

Peter Pearce--  
Biosphere II--

allow the air pressure to go up and down (lungs)

there's an entire brain system off to the side that will regulate the temperature inside--

they don't pump airconditioned, small ocean, mist the air and move the air,

the way they've planned it, the way it drops, there will be a natural air current--

biosphere I--

this is Biosphere I--

doors from Wilshire corridor office building

Amtrak window, with rubber gasket, to use for a table

flatbed printed, we got from a business going out of business

file cabinets

what about the motorcycles--

those are more of a hobby,



again, I was mostly interested in the harley davidson mystique, the free spirit, free thinking individual

to learn how the mechanics work, to take the bike apart systematically, apply all my systems thinking,

tracking down original parts,

never owned a motorcyle,

the more I learned about it, now I'm getting right down to the nuts and bolts

a deliberate attempt to a systems analysis on something--

and learn about it systematically

KAREN--on a manageable scale

1964--Harley Davidson, owned by Glendale Policeman

sort of stuck in the 60s era--grew up in Las Vegas, graduated high school around 75

I remember seeing Jimi Hendrix on the jonny carson show

it always seemed like those guys were having fun and that there was something important going on in their lives--

some of the 60s style come back--

Nov. 12--architecture, annual landmarks section

pitching a group that has to do with landscape--

more of an interested local audience--vitality--13 copies--