MANUFACTURERS & SUPPLIERS OF STANDARD & SPECIAL MILLWORK

LEVEL LINE
JAMES ST. & LEVEL LANE  LAKewood, N. J. 08701  201-363-8700

WOOD WINDOW UNITS
- Double Hung
- Casement
- Awning
- Bow & Bay
- Thermopane

PRE-HUNG DOOR UNITS
- Wood Exterior & Pease Ever-Strait
- Patio Sliding
- Wood Interior, Bi-folding, Sliding

HARDWARE & MISCtELLaneous
- Level Lok, Kwikset & Schlage Locks
- Grote Medicine Cabinets
- Screens & Storm Sash

TRIM
- Packaged Window Trim
- Lineal Mouldings
- Upson Fascia & Soffit
- Weyerhaeuser Paneling
- Wood Shutters & Blinds
- Wood-Mold Plastic Shutters
- Mantels

YOU ARE INVITED TO VISIT OUR SHOWROOM IN LAKewood
Don’t let your best designs disappear at night

Give them 24-hour visibility with outdoor lighting

Chances are you’ve spent a great deal of time and effort creating the designs for your buildings. Don’t let them go unseen and unnoticed after dark. It’s easy to work outdoor floodlights into your designs which will give your buildings 24-hour visibility.

Of course your clients will also be happy to discover that outdoor lights give them round-the-clock advertising, increased safety, plus greater protection against night prowlers.

If you’d like more information on how to give your designs 24-hour visibility, call or write Public Service Electric and Gas today.

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
Someday...

Developing rapidly from a concept once considered "ahead of its time", TOTAL ELECTRIC construction is a present-day reality too promising to overlook! It offers opportunity for fresh planning... focusing on tomorrow's rewards in being "total-electric", as well as today's. Reasons for this choice are many!

Architects and engineers can enjoy greater design freedom thru use of a single, nuclear-age source of energy... electricity! Buildings with integrated electric space-conditioning systems are "classic examples" to be admired long into the future.

Building owners can benefit from economies in installation, minimum maintenance, more cleanliness, and individual room temperature control. What's more, they have the advantage of a special, low total-electric rate.

It's no wonder then, that there are now over 1300 total-electric commercial and industrial installations in our service area which comprises 43% of the State. Seven years ago there weren't even 50. Yes, the number of buildings winning ALL-ELECTRIC BUILDING AWARDS is multiplying daily... symbolizing a new era of electrical excellence. At this rate, who knows... perhaps someday all buildings will be total-electric?

All Buildings May be TOTAL ELECTRIC!

This award is for buildings meeting the following standards of excellence:
- Flameless electric heating
- Electric water heating
- Quality light conditioning
- Electric air conditioning
- Electric kitchens (where needed)

If you're designing a building which will be located in our service area, we'll be glad to assist you.
*SPECIFY

a member contractor of the Heat and Cold Insulation Industry!

IF, YOU ARE AN ARCHITECT / AN ENGINEER, design, consulting, specifying or maintenance / A BUILDER / OR AN OWNER—

IF, YOU ARE PLANNING NEW CONSTRUCTION OR THE MODIFICATION OF EXISTING FACILITIES—

IF, YOU DEMAND A THERMAL INSULATION INSTALLATION PLAN FOR HEATING, PLUMBING, REFRIGERATING, VENTILATING OR AIR CONDITIONING THAT IMPARTIALLY EVALUATES, SELECTS AND ADAPTS THERMAL INSULATION MATERIAL AND APPLICATION TECHNIQUES THAT ARE BEST FOR THE JOB / PRESENTS RELIABLE COST-SAVING ESTIMATES / FURNISHES A HIGHLY SKILLED AND EXPERIENCED WORK FORCE WITH MODERN EQUIPMENT / AND ON-TIME COMPLETION—

* put it in your contract!

For contractor information and further details, contact:

HEAT AND COLD INSULATION INDUSTRY FUND OF NEW JERSEY
520 Westfield Avenue, Elizabeth, New Jersey 07208 (201) 353-5441
Our Technical Division will give you the best kind of advice about all kinds of heating systems and fuel operating costs.

Free.

Oil Heat Council of New Jersey, 66 Morris Avenue, Springfield, New Jersey 07081

(201) 379-1100

Oil heat
(We have a thing about safety.)
ARCHITECTURE new jersey

Volume 4, No. 5
September/October, 1970

6 As I See It
7 President's Page
8 Harbor Community
10 Systems Generating Systems
18 Community Planning - To What End?
19 Art In Architecture
20 AIA Documents
21 Thine Alabaster Cities Gleam
22 Addenda

COVER: The ways in which man has viewed the solar system have resulted in many ideas about its structure. A single set of objects may be thought of as a system in a number of different ways.
DOCTORS AND DENTISTS TO BID FOR GOVERNMENT WORK

Washington, August 24 — Pentagon officials announced today a test program requiring doctors and dentists to submit competitive proposals for professional service contracts.

The year-long test, conducted by the Army in California and by the Navy in South Carolina applies to all contracts for medical and dental services for the armed forces in these states.

Under the new system, doctors and dentists will submit detailed descriptions of their qualifications along with a lump sum estimate of the price they would charge.

A spokesman said that these proposals would be sought from at least three well-qualified practitioners and will serve as the basis for selection by a system of competitive negotiation.

Sounds ridiculous. Of course it is. No one would expect doctors and dentists to compete for fees. It just doesn't happen to professionals. Or does it?

I didn't invent the news article. I copied its substance from a recent issue of The New York Times ... except that I substituted the words "doctors and dentists" for the words "architects and engineers" which appeared in the article.

It is a fact that this test program for competitive bidding of A/E services has just been started in the two states mentioned.

At the prodding of the General Accounting Office, the Department of Defense has chosen the path of price competition in its selection of architects and engineers. Their spokesman states that the government will first review the technical proposals and rate them. After this, sealed envelopes from each company containing the "price estimate" will be opened. They claim that these price proposals "would not be considered as bids but simply estimates to accomplish the work as they (the A/E's) understand it". Oh, come now, General!

It has been proven that procurement of architect/engineer services by competitive negotiation, rather than selection based upon the evaluation of the individual firm's background, experience and competence can cause a significant degradation of quality of services. As a result, everyone loses: the government, the taxpayer, and the professional.

In defense of this program, the government seeks to emphasize the difference between competitive "negotiation" and competitive "bidding". The former, they claim, allows for greater flexibility in selection.

To my view that is purely a subterfuge in semantics. The services that an A/E will be required to provide on a project cannot be as accurately measured and priced the same as a quantity of a product like K-rations. An A/E's estimate of cost would necessarily be based on guesswork since the full parameters of the project are rarely known at this early stage without further exploration. Should selection then be made on the basis of the firm that guessed at the lowest cost? It is both illogical and unprofessional.

Another government agency, the Public Building Service of the General Services Administration, recently studied its A/E selection procedures and came up with this more enlightened approach:

"Architects should be rated on the basis of information related to clearly enunciated criteria such as past projects of a comparable nature, size, and ability of architect's staff, design creativity, budget, schedule and financial capability, and past performance on PBS work; and these ratings should be concisely summarized so that they may be used in the selection of the architect."

Another bright ray of hope is HR16443, soon to come up for a vote in the House of Representatives. The measure requires the Federal Government to select A/E's on the basis of professional qualification rather than price competition. It is important that your Congressman know that you strongly favor this measure.

With your support we can overcome once and for all this unprofessional approach to architect selection.
As we architects become more and more involved in the relationship of our profession to government at all levels, the ramifications and the difficulties increase as well as the satisfaction of helping to improve total environment.

At the local level, architects appear on more school boards and planning boards even though they disqualify themselves from designing the school or the town hall.

At this level also we have been working with the New Jersey Environmental Council and other groups to help create understanding and respect for environment from kindergarten up. Changes in school curriculum may seem to be far removed from architecture, but public awareness is the first step toward public insistence on good planning and good building.

Preservation of our architectural heritage touches the community closely. Architects are taking responsibility in identifying and saving priceless landmarks, and their value—even from the crass point of view of tax returns—has been proved over and over. It is good that government is becoming involved here too from community up to federal agencies.

The environmental design ordinance developed by our committee is an attempt to assist communities in forestalling urban blight by intelligent regulation.

The Federal government sometimes seems to be arbitrarily insensitive if not positively antagonistic to the profession. Billions for defense, but watch those architectural fees. The General Accounting Office suggests that architects must haggle for their fees, bid for commissions. Our prestige in comparison to the medical and legal professions, for instance, is at a low point. No doctor would be asked for a bid on a diagnosis or an operation. Yet that is the position we are presented with.

The fact that the late Architect of the Capitol was not an architect was accepted without violent objection. Perhaps we have been too absorbed in building buildings to realize that these problems also are our concerns, although we do appear to be ahead in the current controversy over the Capitol itself.

The New Jersey Society has inevitably been more active in State affairs than elsewhere. Our legislative committee has been reviewing proposed legislation and recommending action on pertinent bills. I believe that legislators are more aware of our opinions than ever before, whether or not we win in the voting.

We have been meeting with representatives, engineers and contractors on the subject of single versus multiple bids on public work. Architects are divided, as are contractors. A single responsibility is surely easier for the architects to administer, but does this method produce the lowest cost, the best contractors, protection for each contractor? Perhaps the owner should have the option, as long as there are proper safeguards. The outcome will probably be decided soon and will affect the building industry greatly.

We have been discussing contract provisions with the Housing Finance Agency to assure that the architect should not be asked to gamble for his fee, nor should the fee be cut below a normal one. The State can sometimes guard public funds too zealously, serving only to delay the building of sorely-needed housing. A new contract has just been proposed for our comments.

The supply of architects to New Jersey has been curtailed by the lack of available training. Princeton is the only architectural school, with very few New Jersey students. Hundreds of others are trained out of state and a large proportion of them settle elsewhere after school. A committee has been appointed by the Chancellor of Higher Education to investigate the feasibility of public architectural schools in New Jersey. We hope that adequate opportunities will soon be available in high schools, community colleges and on through graduate school.

The respective divisions of state government are interested in a strong Society and receptive to our suggestions on how to make it strong. It is an encouraging area of our profession.
Harbor Community

An Alternative Approach to the
Living Patterns of Urban People

By Warren Freedenfeld

In order to find solutions to the ever increasing problems facing our cities and urban communities, architects, sociologists, economists, social workers, engineers, environmentalists, etc., must begin to coordinate their efforts. Our urban centers, as they exist now, will not, in the near future, be able to support life styles as we have come to know them today. Rather than continuing to try to force human survival in the environments we have outgrown, we must begin to build new and more responsive kinds of communities. When such cities reach a point where they can no longer spread outwardly, they must then establish guidelines by which to develop vertically. Various areas of activity must act as interrelated parts of a well-functioning body.

A “Harbor Community” is one such development, the result of an intense struggle to cope with some of the real problems facing cities like New York. It is a proposal that suggests an alternative and hopefully more realistic way of thinking about the living patterns of urban people. It is certainly not THE solution, but it is a solution, and one that demonstrates a unified integration of life activities within an urban community. It is a city within a single structure.

A city is not an environment made up of separate, unrelated entities. It is a functioning organism that operates interdependently upon each of its parts. Its various areas of activity are connected by, and generated by linear passageways we call streets and avenues; its nervous system. Through means of transportation we are able to reach areas of entertainment, areas of shopping, areas of living, or areas of working.

Such transportational routes as these are part of the basic organizing elements around which the “Harbor Community” is designed. The project is, in essence, a city turned on its side; a vertical city; buses become elevator cars and avenues become elevator shafts, linking the various streets or levels of activity within the community. An individual can then reach any area quickly and easily without all the hassles one must usually encounter and endure on the surface streets of Manhattan.

Such a development would then provide and make available a broader spectrum of living patterns and experiences. It would enable more people to share in a greater variety of benefits of urban living. Whole new worlds of activity could then be made available without the limitations often imposed by one’s own locale.

The “Harbor Community” is a megastructure. Ideally, a self-sustaining megastructure, able to reclaim its own waste and provide for its own needs as if it were a satellite in space. These are certainly not new ideas, but very rarely are such undertakings ever seriously considered or seriously proposed, never going beyond the conceptual stage. This does. In its own relatively small way, it outlines a definite proposal for a specific site. It is designed and programmed to meet the actual needs of the area in which it is located.
The entire community is designed in such a way that only the poured-in-place concrete towers housing the vertical transportation systems need be constructed on the site. Each floor level is a space frame, prefabricated and brought to the site in sections on barges, then lowered down the concrete towers into position and welded together. Within the space frames run all plumbing, mechanical, electrical, and waste disposal systems. All interior partitions and exterior walls are also prefabricated and snapped into position.

The proposals set forth by the New York City Planning Commission for the Hudson River Harbor Line have also been integrated into the design as major design parameters. These include a mono-rail (linking the West Side Harbor Line from Battery Park to upper Manhattan), an underground expressway (replacing the present West Side Highway) and the use of filled land out in the Hudson River as a site for such future residential/commercial developments (replacing the old rotting piers that exist there now).

The site is on Manhattan's west side waterfront, between W. 11th Street and W. 12th Street, across from, and linked to, the new Westbeth Artists Housing development. This particular site was chosen mainly because of the growing residential population in this area which is in need of such commercial support facilities as provided by the "Harbor Community". As shown in the photographs, the mono-rail would penetrate through the structure at a level most convenient for commuters. Below is the main entry level housing various civic agencies and community support organizations such as medical and dental clinics, display areas, etc. From the main entry level one may reach any area or any activity within the megastructure by elevator or escalator. Below, there are two levels, providing parking for over 60% of the living units.

Above the mono-rail is a shopping mall encompassing three interconnected levels. The shopping mall opens spatially upward into the entertainment levels with a theater, indoor and outdoor exhibit space, indoor and outdoor dining, nightclubs and other related facilities. Above the entertainment areas are several levels of rentable office space providing the community's base of economic support. At a level above most of the surrounding buildings is a park with a day care center for the children of the community. Within the uppermost levels there are other community facilities such as meeting rooms, a large seminar auditorium, a cafe, art studios, and multipurpose workshops.

On the ground, next to the river, the main structure, together with the two wings, encloses a marina with boat repair facilities. In addition, there are parks, a swimming pool, eating areas, an outdoor restaurant, and a small amphitheater. Paths on which to walk or ride bicycles wander throughout the grounds and along the waterfront with tree covered sitting areas alongside.

To some, planning on such a large scale often seems a bit frightening, yet the problems facing mankind are even more frightening. It will take efforts such as this to overcome the tremendous problems that lie ahead. It is our own technology, which has brought us to our present state of affairs. It must then be our own technology which provides the vehicle for our survival.
1. There are two ideas hidden in the word system: The idea of a system as a whole and the idea of a generating system.

The word system, like any technical word borrowed from common use, has many meanings and is imprecise. This lack of precision in a technical word might seem dangerous at first; in fact it is often helpful. It allows new ideas to flourish while still vague, it allows connections between these ideas to be extended, instead of having them cut short by premature definition and precision.

Let us consider some examples of holistic phenomena which need to be viewed as systems.

The great depression is an obvious example of a holistic phenomenon. We cannot understand the depression, except as a result of interaction among rates of consumption, capital investment and savings: the interactions can be specified in the form of equations:

2. A system as a whole is not an object but a way of looking at an object. It focuses on some holistic property which can only be understood as a product of interaction among parts.

3. A generating system is not a view of a single thing. It is a kit of parts, with rules about the way these parts may be combined.

4. Almost every “system as a whole” is generated by a generating system. If we wish to make things which function as “wholes” we shall have to invent generating systems to create them.

A candle flame maintains its steady size and shape because of the balance between the amounts of oxygen and fuel that are made available.
if we follow these equations through to their conclusion, we see that under certain conditions they must always lead to a depression.

The stability of a candle flame is another example of a holistic phenomenon. Why does it maintain approximately the same size and shape throughout its flickering? In this case, the "parts" are flows of vaporized wax, oxygen, and burnt gases — the processes of combustion and diffusion give the interaction between these flows — and these interactions show us at what size and shape the flame will be approximately stable.

The strength of a rope is another example of a holistic property. This strength is a result of interaction among the individual strands, caused by the twisting of the rope: untwisted, the rope's strength is governed by the weakest strand; twisted, the strands act together and increase their strength.

Another example of a holistic property, is the relation between input and output in any computer. In the toy computer called Thinkadot, a ball dropped into one of three holes, comes out on one of two sides. The output side is not determined by the input hole, but by the input hole and the internal state of the machine, which is itself determined by the sequence of past inputs. In order to understand this behavior, we must understand the machine as a whole, considering the past inputs and the internal states, as parts and the way that different sequences of inputs and internal states create specific new internal states and outputs as interactions.

Another kind of holistic behaviour is that instability which occurs in objects that are very vulnerable to a change in one part: when one part changes, the other parts change also. We see this in the case of erosion: cutting down trees robs the soil of the roots which hold it together, so that wind and water can strip the soil of all remaining plants, and make a desert. We see it again in the death of the traditional farm: when the combine harvester replaced traditional
harvesting, the entire balance of scale economies was destroyed, the little farms collapsed, and gave way to giant farms.

Let us summarize the content of these examples. In every case we are confronted with an object which displays some kind of behaviour which can only be understood as a product of interaction among parts within the object. We call this kind of behaviour, holistic behaviour.

The central point of the whole argument can be stated very simply. The most important properties which anything can have are those properties that deal with its stability. It is stability which gives a thing its essential character. The strength of an arch, the even burning of a flame, the growth of an animal, the balance of a forest ecology, the steady flow of a river, the economic security of a nation, the sanity of a human individual, the health of a society: these are all, in one way or another, concerned with stability.

Stability, no matter in which of its many forms, is a holistic property. It can only be understood as a product of interaction among parts. The essential character of anything whatever, since it must at heart be based on some kind of stability, must be understood as a product of interactions within the whole. When we view a thing in such a way as to reveal its character in holistic terms, we speak of it as a system.

In order to speak of something as a system, we must be able to state clearly: 1. The holistic behaviour which we are focussing on. 2. The parts within the thing, and the interactions among these parts; which cause the holistic behaviour we have defined. 3. The way in which this interaction, among these parts, causes the holistic behaviour defined.

If we can do these three, it means we have an abstract working model of the holistic behaviour in the thing. In this case, we may properly call the thing a system. If we cannot do these three, we have no model, and it is meaningless.
to call the thing a system. The idea of a system is synonymous with the idea of an abstract model of some specific holistic behaviour. We may speak of the economic system in a country, because we can construct a system of equations which reproduce important holistic phenomena like depressions or inflation. If we couldn’t do this, it would be meaningless to speak of economic systems.

We must not use the word system, then, to refer to an object. A system is an abstraction. It is not a special kind of thing, but a special way of looking at a thing. It is a way of focusing attention on some particular holistic behaviour in a thing, which can only be understood as a product of interaction among the parts. Everything under the sun may be viewed as a system: a man smoking a cigarette may be viewed as a system; so may a leaf drifting in the wind; so may a brick; so may mankind on earth. But it only becomes a system if we abstract from it some special holistic property, which we cannot explain except in terms of interactions within the whole. Without a specific statement of what holistic behaviour we have in mind, what interactions among what parts cause this behaviour, and how they do so, calling a thing a system is no more than saying: “This is a pretty complicated thing, and I don’t understand it very well.”

The idea that a system is an abstraction, needs emphasis. Think of a flower as a system. If we want to understand the fact that the flower buds, and swells, and blooms—that we must certainly do by looking at the flower as a system. In this case it is the interaction among the parts, which creates the behaviour of the whole. But the same flower, has
other properties which are not helped at all by thinking of the flower as a system: if it is used as a projectile, then its trajectory cannot be explained as a result of interactions among its parts: and if it is given as a gift, there is nothing that the flower does, no matter how complex the situation, that needs to be understood as a result of interactions among the flower's parts. The idea of a system is helpful only in understanding kinds of behavior which result from interactions among parts.

Furthermore, even though we call a thing a system when we try to view it as a whole, this does not mean that we ever really view the thing in its entirety. When we look at an airline from a systems point of view, we may focus on its scheduling—and we shall learn that because the airline only has a limited number of aircraft, the schedule of a flight from New York to Chicago turns out to be dependent on the schedule of another flight from Minneapolis to Salt Lake City. In this instance, we are looking at the airline "as a whole," because we are looking at the interactions among parts, but we are not concerned with the last button on the last mechanic's cap. The notion of "whole" refers only to the breadth of vision, not to the inclusion of detail: it is still abstract.

Most often common language obscures this very badly. When we speak of the solar system, or a hi-fi system, or an airline system, or of a plumbing system, the words are used in such a way as to suggest that the "system" is synonymous with the objects. But just occasionally the word is used correctly, even in common language. For instance, when we speak of the Ptolemaic system as opposed to the Copernican system, in each of these cases the word "system" is used correctly: it refers to an abstract way of looking at the interaction among earth, planets, sun and stars—not to the objects themselves.

The discipline of abstraction has one drawback. Occasionally we are confronted with phenomena which are clearly the products of interactions—but the interactions are so complex that we cannot see them clearly, and we cannot make the effort of abstraction successfully. Take for instance, the baffling complexity of a seagull landing, or of an ecstatic, screaming, laughing girl. In these cases a too rigid insistence on the idea that a system is an abstract model, might easily lead us to abstract out some facile inessential system—at the cost of the wonder which is really there.

This is exactly what happens when a systems analyst looks at a building—manages to describe the circulation, the acoustics, the heating and the load bearing structure as systems—and fails to identify the most interesting human and social systems, because he can't describe them in explicit terms.

Thus there is a second lesson to be learned. The first lesson said: Don't call a thing a system unless you can identify the abstract system you are talking about. The second lesson says: Learn the first lesson, but don't let it railroad you into making facile abstractions. When we are confronted with a complex thing, we often begin with nothing more than a feeling or a "sense" that it functions as a system. Driven by this feeling, we then try, painstakingly, to abstract out just that holistic behavior which seems essential, and those interactions which cause the behavior. This is an active process. It begins with feeling, and sensing, and only turns to thinking later. Start with some aspect of life so interwoven that you feel in your bones it must be a system, only you can't state it yet—and then, once you can feel it clearly, then try to pin the system down, by defining the holistic behavior you are discussing, and which interactions among which parts create it. But feel it clearly first, before you try to think it.

The systems point of view is not neutral. It will change your whole view of the world. It will lead you to realize that the most important characteristics of human individuals are products of their interactions with other people. It will lead you to realize that the life of nations—though these nations may seem self-sufficient—is produced by interactions in the whole world, and that they only get their strength from their position in this larger whole. It will lead you to see that the health of cities is produced by interactions among interdependent parts, including houses, cafes, and theaters, yes, but also equally including slums and graveyards.
The system viewpoint is a modern, disciplined version of the sense of wonder. It is that view of things which man takes when he becomes aware of one-ness and wholeness in the world.

3. A generating system is not a view of a single thing. It is a kit of parts, with rules about the way these parts may be combined. This is a different use of the word system from the first one. In colloquial English we often use the word system to mean “a way to do something”; that’s what a betting system is; that’s what the Montessori system is; that’s what the democratic system is.

Each of these systems is, at heart, a system of rules. A betting system tells you how to place your bets, the Montessori system lays down rules to be followed by children and teachers in nursery school, the democratic system of government lays down certain rules about the nature of representation, the choice of representatives, and the conduct of elections. In all these cases, the rules are designed to generate things. A betting system supposedly generates winning bets, an educational system generates well educated pupils, the democratic system supposedly generates freedom and good government.

We may generalize the notion of a generative system. Such a system will usually consist of a kit of parts (or elements) together with rules for combining them to form allowable “things.” The formal systems of mathematics are systems in this sense. The parts are numbers, variables, and signs like + and =. The rules specify ways of combining these parts to form expressions, ways of forming expressions...
from other expressions, ways of forming true sentences from expressions, and ways of forming true sentences from other true sentences. The combinations of parts, generated by such a system, are the true sentences, hence the axioms of mathematics. Any combination of parts which is not formed according to the rules is either meaningless or false.

A generating system, in this sense, may have a very simple kit of parts, and very simple rules. Thus the system of triangles which may be put together to form a square, is a generating system. Its rules generate all the ways of putting these triangles together to form a square. It is typical of a system that the rules rule out many combinations of the parts. Thus these triangles could be put together in an infinite variety of ways—but most of these ways are ruled out, because the outside perimeter is not a square, and this thing is not connected.

Another example of a generating system is the system of language. Here we have rules at several different levels. At one level, the letters are the parts, and there are rules which govern the way that letters may be put together to form words. In English there could be no word beginning with Rx. The rules of phonology prohibit it. At another level, the words are themselves parts, and there are rules which govern the kinds of sentences which may be made from words.

Perhaps the most interesting and important generating system in the world, is the genetic system. Every animal in the animal kingdom is generated by a set of chromosomes specific to that animal. Each chromosome in turn is generated by four bases (like a necklace which uses only four kinds of bead). The four bases form a kit of parts which generates the chromosome. These chromosomes themselves provide the rules for building amino acids (another kit of parts), proteins from amino acids (another kit of parts), cells from proteins (another kit of parts) and then builds the animal from cells. The kit of parts formed by the four bases, and their rules of combination, indirectly generates every animal there is.

A building system is a generating system in this sense. It provides a kit of parts—columns, beams, panels, windows, doors—which must be put together according to certain rules.

4. Almost every "system as a whole" is generated by a generating system. If we wish to make things which function as "wholes" we shall have to invent generating systems to create them.

There is a relationship between the two ideas of system which have been defined. Almost every object with behaviour that depends on some "system as a whole" within the object, is itself created by a generating system.

Take an obvious and simple case: a hi-fi system. Its purity of performance can only be understood as a product of the combined effect of all the various components, working as a whole. The same hi-fi system is also generated by a generating system: the kit of all the parts on the market, and the rules governing the electrical connections and impedance matching between these parts.

To take a more complicated case: the railroad switchyard. It plainly functions as a whole. In order to understand it as a device for breaking up and making trains, we must focus on the sequence of switches, and on the fact that the length of track in front of the switches depends on the length of track behind the switches and on the length of trains. At the same time, the switchyard is also plainly generated by a generating system. The pieces of track, switches, couplings, cars, together with the rules for putting them together, form a kit of parts which generates properly functioning switchyards.

The most complicated case of all, and the clearest, is that of an animal. A landing seagull certainly needs to be seen as a system: so does almost everything else that seagulls do. At the same time, this seagull is created by a generating system: the genetic system. An animal is both something which needs to be seen holistically, and generated by a generating system.

The relationship between holistic systems and generating systems is easy to understand. If an object has some holistic property caused by interaction among parts—then it is clear that these particular parts and these particular interactions, will only come into being if the parts have very constrained relationships to one another. The object then must be generated by some process which assembles parts according to certain constraints, chosen to ensure the proper interaction of these parts, when the system operates. This is exactly what a generating system is.

The generating system need not be conscious (as in the case of the switchyard), nor even always explicit (as in the genetic case). Sometimes the processes which make up the generating system are integral with the object being formed—thus the candle flame is generated by chemical processes which are the same as those processes which then maintain the system's equilibrium and make up the interacting parts, when we view the flame as a holistic system.

It is true then, that almost every "system as a whole" is generated by a generating system. This axiom contains a remarkable lesson for designers. Man as a designer is concerned with the design and construction of objects which function as wholes. Most of the important properties a city needs to support life, for instance, are holistic properties.

Our axiom means this: To ensure the holistic system properties of buildings and cities, we must invent generating systems, whose parts and rules will create the necessary holistic system properties of their own accord.

This is a radical step in the conception of design. Most designers today think of themselves as the designers of objects. If we follow the argument presented here, we reach a very different conclusion. To make objects with complex holistic properties, it is necessary to invent generating systems which will generate objects with the required holistic properties. The designer becomes a designer of generating systems—each capable of generating many objects—rather than a designer of individual objects.

A final word of caution. As we have already seen, a building system is an example of a generating system. It is a kit of parts with rules of combination. But not every generating system necessarily creates objects with valuable holistic properties. The generating system which makes squares out of triangles is an example. It is a perfectly good generating system; yet the objects it produces do nothing: they have no holistic system properties whatever. In the same sense, those building systems which have so far been conceived, make buildings, but they do not make buildings with any really important holistic system properties. In a properly functioning building, the building and the people in it, together form a whole: a social, human whole. The building systems which have so far been created do not in this sense generate wholes at all. While it is inherent in the generating system of an animal that the finished animal will work as a whole, it is not inherent in any of today's building systems that the buildings they produce will work as social or human wholes. Creating building systems in the present sense is not enough. We need a new, more subtle kind of building system, which doesn't merely generate buildings, but generates buildings guaranteed to function as holistic systems in the social, human sense.
These are kits of parts

(which make)

this kit of parts

ABCDEF GHIJKLMNOPQRSTUVWXYZ

(which makes)

this kit of parts

(which makes sentences)
Architects have a special responsibility to promote public understanding of the need for a good environment. Our concerns go beyond the current justifiable reaction against the dangerous pollution of our land, air and water. We are concerned, after all, with the total quality of life style. The task of creating a fine environment is enormous but I submit we can begin at home, for the condition of New Jersey is a composite of the individual actions of well-intentioned municipalities.

The Middlesex-Somerset-Mercer Regional Study Council published a report entitled *Housing and the Quality of Our Environment* in January of this year. The findings of the report reinforce, by detailed study of a portion of central New Jersey, the now classic picture of communities whose planning decisions are influenced in large measure by their need to rely heavily upon real estate taxes as a source of revenue.

The report found that present zoning in the 20-municipality region lying between Trenton and New Brunswick will permit the development of over 2,000,000 new jobs while permitting an increase in the resident work force of 140,000 people. In addition, the homes which can become available under zoning will be primarily single-family dwellings priced well beyond the means of most workers, even those employed in prestigious research and development corporations. That this should be the planned intention of so key an area of the state boggles the mind. Yet each municipality justifies its contribution to the planned imbalance between jobs and housing on the need to maintain a reasonable tax rate.

As a consequence of the necessary preoccupation with the need to balance the municipal budget, social and physical planning considerations frequently take a back seat. The environmental consequences of master plans and zoning plans, when the full development of a community has occurred, are often dimly perceived. Inadequate transportation, insufficient open space, a paucity of cultural and recreational facilities, inefficient services and disruptive social patterns are almost an inherent part of plans dominated by single-family developments in combination with "ratables," especially when whole regions adopt the philosophy.

It is difficult to imagine that these problems can occur in an area where farmland abounds, giving a pleasant aspect to the region, and the few housing developments and occasional research plants don't seem so bad. Yet, subdivisions and research plants, however elegant, eventually use up all the available land and once adequate open space no longer seems so. As the region develops into "spread city" inadequate roads are called upon to handle ever-increasing volumes of vehicles. The workers needed to support the industry that has been sought must commute in and out of the region daily because housing has not been provided for them. As transportation problems increase, there is less and less inclination on the part of the residents to go elsewhere for cultural and recreational activities, and, of course, few facilities have been provided close at hand. Services of all kinds become poor in quality or entirely unavailable. The quality of life diminishes.

Perhaps more costly than any of these unplanned events which the municipality experiences, are the effects on neighboring cities. The suburbs increasingly take jobs away from cities and fail to provide housing relief for the cities, thus contributing to their downward spiral. The city resident — and that increasingly means the black city resident — becomes a victim of his neighbor's fiscal planning.

The consequences I have described are not far-fetched. Indeed they exist in many parts of the state. And yet in the developing suburbs the focus of attention is upon the tax rate and not upon the consequences of the plans developed to control taxes.

All of us should ask our communities to examine the consequences of their decisions. Local awareness may insure that the work of the Governor's Tax Commission will bear fruit in the legislature. But let us not be misled that mere removal of the obstacles to planning posed by the municipal real estate tax will lead to a different approach to planning. Only an understanding by the public of the consequences of the plans developed to control taxes.

The word "Environment" has caught the imagination of the public. It is a word that has long been in the vocabulary of architects and it is up to us to help to give it full meaning.
Art in Architecture

In our continuing interest in promoting the use of Art in Architecture, we present the work of G. Thomas Brooks, Jr., of the firm of Kramer, Hirsch & Carchidi, Trenton.
H.E.W. ANNOUNCES APPROVAL
OF USE OF AIA GENERAL
CONDITIONS

The U. S. Department of Health, Education and Welfare recently notified the AIA that the AIA General Conditions (Document A201) and the AIA Federal Supplementary Conditions (Document A201/SC) are now approved for use on all Federally assisted construction projects under the purview of that Department. This announcement culminates over two years of effort on the part of AIA and HEW to develop this standard document for Department-wide use in HEW. Original approval was given in 1969 for the use of A201-A201/SC on construction projects handled by the Office of Education, HEW. New (April, 1970) editions of the documents have been prepared to incorporate minor modifications required prior to Department-wide approval.

Although this represents a major step in the AIA's program to encourage Government Agencies to adopt standard AIA documents for their construction projects, efforts are continuing to accomplish this objective in other Federal Agencies. The Federal Housing Administration Dept. of H.U.D. requires A-201 on projects they insure under certain programs.

HISTORY OF AIA STANDARD
CONTRACT FORMS

AIA Standard Contract forms have been in use since 1885. They are periodically improved and updated and are now used nationwide on an enormous volume of construction. Much of the private construction of the country is done on these forms, and they are also becoming increasingly accepted for governmental work.

ADVANTAGES OF USING THE AIA
STANDARD CONTRACT FORMS

There are a number of advantages in using the AIA Forms.

1. Perhaps the chief one is that most architects, engineers and contractors are familiar with them. They know what they contain and do not have to spend hours with their attorneys studying the provisions of the proposed contract and haggling and negotiating over them. This results in costs which are not inflated to cover contractual contingencies.

2. There thus results an efficiency and economy from using the AIA forms. They save the valuable time of architects, state officials, and contractors. They also save expenses in lawyers' fees.

3. The forms are the result of many years' experiences. They are very complete and the meaning of their provisions has become known and accepted. We believe that they are fair and that they cover many of the basic situations which are apt to arise in the construction process and can easily be supplemented to cover local conditions. The Standard General Conditions have been endorsed by The Association of General Contractors and various other components of the construction industry.

4. The use of these forms tends to develop uniform terminology, processes and procedures in the industry and facilitates construction.

USE OF THE AIA STANDARD
CONTRACT FORMS BY OTHER
GROUPS

We have not made a comprehensive survey of the states presently using the AIA forms, but we do know that many school districts, administrative bodies, commissions, state governmental bodies and universities in the following states are using them, with a few minor modifications:

- Florida
- Illinois
- Indiana
- Oregon
- Colorado
- Maryland

Some of the groups in New Jersey using AIA forms include:

- **Boards of Education:** Clifton, Wayne, Ramapo-Indian Hills Regional, Little Falls, South Brunswick, Old Tappan, Red Bank, Kinnelon, West Orange, North Arlington, Clark Township, River Edge, Oradell-River Edge Regional, Bogota, Alpine, Hillsdale, River Vale.

- **Library Boards:** North Plainfield, Clark, Wayne, Red Bank, Maplewood, Cedar Grove.

- **Miscellaneous Groups:** North Arlington Township, Union County, Borough of Haworth.

QUESTION OF COPYRIGHT

There are two ways AIA forms may be used by governmental bodies — one is to use the AIA printed form, with a locally prepared amendment making such modifications as desired. The other is to print forms locally containing the modifications desired.

Although the AIA has copyrights on these forms, it will gladly consider giving permission to governmental bodies to reproduce them. The Institute strongly supports the concept of promoting uniformity of contracts throughout the construction industry, and if a governmental body would prefer to print its own forms rather than purchase them from the AIA at a nominal cost, their request will be given every consideration. Generally, it is recommended that forms be purchased from AIA since this will insure that the latest editions will be used and does not run the risk of increased liability due to obsolete contractual provisions.
Clouds of smog hover over our cities. Cities once crowned by canopies of stars. Grime on our windowsills and soot in our eyes no longer surprise us. And we bring tiny babies out of sterile hospitals into an atmosphere so polluted, plants choke on it in a matter of weeks.

America, the beautiful. Our America. The crisis isn’t in our cities; the crisis is in our hearts. With a change of heart, we can change the picture.

Send this page to your Congressman and ask him to support enforcement of our air pollution laws.
Addenda

Architect Robert Gebhardt of Upper Saddle River was accorded the 1970 Vegliante Award for outstanding contributions and service to the field of architecture. Gebhart has served on the scholarship and convention committees of the State Society and is Vice President of Architects League. An alumnus of Cooper Union, he designed the Robison-Anton plant in Fairview, Saddle Brook Hospital, Cerami Pontiac in Paramus, among others.

Levon M. Khachadourian, AIA, ARIBA, was elected President of the Handi-Crafters, Inc., a non-profit Montclair organization specializing in hiring the handicapped. In addition to serving as Director of the Bloomfield Chamber of Commerce and the Bloomfield Boys Club, he is a Board member of Prospect Hill Country Day School and N. J. Boys Chorus School. He is also President of the Eastern District Committees of Armenian General Benevolent Union of America.

Robert J. Booye, AIA, announced the opening of his new architectural firm at 1 So. South Carolina Avenue, Atlantic City.

John Robert Gilchrist has announced the relocation and expansion of his firm, J. Robert Gilchrist, AIA, & Associates, to 57 Chestnut Ridge Road, Montvale. Two staff members, Indriks Maris Kaneps and Michael T. Callori, have been advanced to associate status.

Bohdan Kotys, AIA, has moved his offices to 46 Bayard St., New Brunswick 08901.

Thomas E. Torricelli, AIA, has moved his offices to 215 Union St., Hackensack 07601.

George R. Dissman, AIA, has opened his new office at 291 Main St., Millburn 07041.

Joseph A. DiPalma, AIA, has opened his new office at 383 North Kings Highway, Cherry Hill 08034.

Robert B. Heintz, AIA, has opened his new office at 272 Forest Drive South, Short Hills 07978.

Gerber & Pancani, AIA, have moved their offices to 99 Morris Ave., Springfield 07081.

J. Robert Hillier, Architects/Planners, have moved their offices to 1101 State Rd., Princeton 08540.

Eppe & Seaman, Architects, have moved their offices to Southgate Building, 310 South St., Morristown 07960.

Alvin L. Voogd, AIA, has moved his offices to 82 Watchung Ave., North Plainfield 07060.

SPECIALISTS IN

distinctive architectural woodwork

MASTRO
LUMBER & MILLWORK CO.
124 43rd Street, Union City, N. J., UNION 7-2121

A superior quality, individualized service to the architectural profession and the building industry.
NEW STATE BOARD PRESIDENT
Vincent J. Cerreta, AIA, newly elected president of New Jersey State Board of Architects. He was appointed to the Board in January, 1968, by Gov. Richard J. Hughes. Mr. Cerreta was educated at New York University and is a Beaux Arts Institute of Design Medalist.

NEWARK AREA DIRECTOR OF HUD NAMED
Peter J. Longarzo, AIA, has been named Newark Area Director of the U.S. Dept. of Housing and Urban Development. He was formerly head of the Newark Federal Housing Administration Insuring Office for thirteen years. He first joined federal service in 1935 as an assistant chief architect in the Newark office of the Housing Administration. Mr. Longarzo has studied at Columbia University, the Beaux Arts Institute of Design, Newark College of Engineering, Rutgers University and the Fawcett School of Arts.

As this publication went to press, we received news of the passing of one of our most valued members, Martin Nosenchuk, AIA. Mr. Nosenchuk was Treasurer of Architects League of Northern New Jersey, and an uniring and dedicated worker for the League and for the State Society. His contributions to the profession were many and varied.

We shall all miss him greatly. We offer our deepest sympathy to his wife, Bryna, and to his sons Daniel, Robert and Neil.

How to get your heat and keep your cool just as you planned it!

Sheet metal and air handling contractors are responsible for the air-flow through the systems you design and they fabricate and install. As systems become more complex, it stands to reason that through “Separate Specifications” assigning total responsibility to the air contractors would assure meeting design demands. “SMACNA NEW JERSEY” is an association of Sheet Metal and Air Handling Contractors dedicated to meeting those demands using proven national standards of fabrication and installation. SMACNA NEW JERSEY can keep you cool!

For further information and literature, contact SMACNA NEW JERSEY, (New Jersey Chapter, Sheet Metal and Air Conditioning Contractors National Association), 1435 Morris Avenue, Union, N.J. 07083. Phone: 201-686-7626-7.
Products and individual service are our greatest assets. Our specialists are eager to serve you, the architect, in design decisions and materials’ budget. Our organization values service to you and your clients as our first responsibility. You can be assured that the products for your projects will be available and be supplied as specified.

CALL OUR EXPERTS … TOGETHER WE CAN CREATE BETTER BUILDINGS.

Available to Architects upon request: GR PRODUCTS CATALOGUE

MILLWORK by:

Quality is the key to a complete line of millwork including: C-200 CASEMENTS, C-200 AWNING, C-100 DOUBLE HUNG, HORIZONTAL SLIDERS, the incomparable CARADCO PATIO DOOR and the unique DOORWAY UNITS. All of these products meet the highest standards of design, material workmanship and performance.

LAMINATED BEAMS by:

The scope of tomorrow’s architecture is bound only by the ingenuity and creativity of today’s designers. Depend on Koppers to provide the special structures to fulfill imaginative design requirements. Design with the assurance that laminating has enhanced the strength, fire resistivity and natural stability of wood - the most abundant, beautiful and economical building material available.

CLASS "B" and "C" SHINGLES and SHAKES by:

Western red cedar combines natural long life, excellent strength and light weight. These inherent properties mean superior durability and weather resistance right from the start. Properly installed, red cedar shakes and shingles defy high winds and hail. Add the exclusive Koppers fire-retardant treatment, and you have a roofing or siding material that will provide years of maintenance-free protection.

RING TRUSSES by:

There is NO truss connector system in use today that has been so completely time tested and job proven as the TECO split ring system. It is the ONLY roof truss system that can be used for such an unlimited variety of spans and configurations. There is a type of TECO split ring truss to meet almost every conceivable condition and desire.

ROUTE 70 & CEDARBRIDGE AVE. 477-4600

AT THE NEW HABITAT CENTER 70

OWNER-DEVELOPER: GLEN ROCK LUMBER • BRICKTOWN; S.R. LEONE, PRES.

TENORE & TOMAINO, ARCHITECTS
ALLIANCE for Architectural PROGRESS

Within the concept of spirited cooperation the Structural Steel and Ornamental Iron Association of New Jersey strives to maintain a continuous flow of educational and informational material and programs to the architectural profession of New Jersey... to help keep pace with innovations and advantages of structural steel and ornamental iron in new construction.

The exchange of technological data and progress creates a tightly welded link between the structural steel industry and the architectural profession to better serve the construction industry and the general public.

YOUR FREE FOR THE ASKING

Goals and objectives of the Structural Steel and Ornamental Iron Association of New Jersey are set forth in a comprehensive free brochure now available to members of New Jersey Society of Architects, AIA. For your copy write S. S. and O. I. A. of N. J., 11 Commerce Street, Newark, New Jersey.

STRUCTURAL STEEL and ORNAMENTAL IRON ASSOCIATION of N. J., Inc.

15 WASHINGTON STREET/NEWARK, NEW JERSEY 07101/623-7731
want
to buy
some
used bathtubs?

Excellent condition, modern contour shape, some decorated, complete with drain and overflow, only 3,700 years old.

We’re kidding. These bathtubs aren’t for sale. They’re priceless relics from the Palace of Knossos on the Mediterranean island of Crete and were in common use as far back as 1700 B.C. One of the great marvels of the ancient world, this Minoan palace was also equipped with sanitary and fresh water piping systems of remarkable sophistication. Minoan skills in hydraulic and sanitary engineering far surpassed other early cultures, even the Egyptian.

Obviously, these complex Minoan plumbing systems didn’t just happen. They were built by men of talent and imagination. We like to think of them as the forefathers of our industry — mechanical contracting. We’re proud to have forebears of such distinction because their accomplishments illuminate the progress we’ve made since then in plumbing and piping system technology.

While plumbing expertise is only one of the skills our industry offers today (we also install heating and air conditioning systems, and process piping for industry), it is as critical as ever, perhaps more so, to the good life in a civilized society.

This means that the man responsible — the mechanical contractor — must be many things to many people in today’s world. He must also keep constantly abreast of changing techniques and needs — air and water pollution control, for example — so as to meet the challenges of the future.

We’re bending every effort to achieve this through training programs for our skilled union craftsmen and continuing management education and research, to better serve our customers and the public.

The mechanical contractor is a good man to know. You might say he is a Man for All Times, yesterday, today and tomorrow.

The Mechanical Contracting Industry Council of N.J.
134 Evergreen Place, East Orange, N.J. 07018