



student publications
of the school of design

north carolina state college
raleigh, north carolina

volume 4 number 1 fall 1953

THE COVER, A PHOTOGRAPH BY **RALPH MILLS**, SHOWS **MANUEL BROMBERG** AND HIS STUDENT ASSISTANT **LIGON FLYNN** WORKING ON THE MURAL FOR THE NEW STUDENT UNION BUILDING NOW BEING CONSTRUCTED ON THE CAMPUS. THE MURAL, A FRESCO MEASURING TEN BY FORTY FEET, IS SITUATED ON THE EAST WALL OF THE CAFETERIA ON THE GROUND LEVEL OF THE BUILDING. BOTH MURAL AND BUILDING ARE SCHEDULED FOR COMPLETION EARLY THIS SPRING.

This magazine was originated by the students of the School of Design and is maintained as an independent student project.

Editor: FORREST W. COILE, JR.; *Business Manager:* PAUL S. SHIMAMOTO; *Associate Editor:* EDWIN EGAN; *Layout and Typography:* B. J. BLECH; *Technical Coordinator:* J. FORREST BARNWELL; *Circulation Manager:* HARRY MOSER; *The Staff:* BETTY ANN EASTER, WILLIAM HALL, IRWIN E. JONES, RALPH L. KNOWLES, TRUMAN NEWBERRY, F. VERNON H. SMITH, JR., MARTIN SPERBER. *All material in this issue is copyrighted by* STUDENT PUBLICATIONS OF THE SCHOOL OF DESIGN—1953, *and no portions may be reproduced without written permission.* *Published three times a year. Patron subscriptions—$10.00 for one year; Regular subscriptions—$6.00 for one year; Individual copies—$2.00.* EDITORIAL AND BUSINESS OFFICES: BOX 5273, RALEIGH, NORTH CAROLINA.

On December 7, 1953 Student Publications of the School of Design held the second annual art auction. This year the auction was held in the Green Room of the Raleigh Little Theatre. We are indebted to all of those who contributed their work to the auction, to all of those who attended, to Mr. David Bowen, Director of the Raleigh Little Theatre, and to Mr. Roy Gussow of the School of Design who kindly donated his services as auctioneer.

CHARLES HOWARD KAHN

volume 4, number 1, fall 1953

manuel bromberg: **THE ANTICIPATORY DESIGN PROCESS**

goldfarb, kina: **THE ARCHITECT AND AGRICULTURE - TWO**

buckminster fuller: **NO MORE SECOND HAND GOD**

lewis clarke: **THE LANDSCAPE SURVEY**

bier, simon, wilkinson: **THREE STUDENTS AND "DESIGN PRINCIPLES"**

"The artist is not a special kind of person, but every person is a special kind of artist."

Father Courtrier

THE ANTICIPATORY DESIGN PROCESS

The following is a transcript of an off-hand talk delivered by Professor Manuel Bromberg to the Student Chapter of the American Institute of Architects on the night of October 6, 1953.

Manuel Bromberg
Associate Professor of Design
School of Design
North Carolina State College



RALPH MILLS

I consider it an honor to be asked to speak to you tonight. I puzzled over it for a while; I decided that you are still trying to comprehend what I have been saying to you for four or five years because I only have one subject, and I present it one way or another. Tonight, I have it disguised under the name "Anticipatory Design Process." But, it is really the same old business over again. I got into this title by having to get fancy with some Textile students. I'm not a teacher, I'm not a speaker, and I try not to be a preacher. I really hope the day will come when there will be no need for either so-called teaching or so-called preaching. I know a story about a preacher who really wasn't a preacher, he was a Rabbi in a small village. He hated preaching, he didn't like it one bit, and he avoided it at all times. But, one day a very famous preacher came to town and he insisted upon preaching. He was too important a man to turn down, so the Rabbi allowed him to preach to a group. After he finished his preaching, he asked the Rabbi, "Well, what did you think of it?" The Rabbi replied, "It was terrific, really breathtaking, absolutely fascinating. But really, how can you compare the merits of preaching to not preaching?"

You get dragged out of your studio out of necessity, and you are put into a position where you are asked to teach and to explain things and to perform within a pre-designed order, and it is not your rhythm. You know this is a perfectly good rhythm for some people who believe in facts, but it is very difficult for a painter to firmly say, "This is so!" about anything. He can't get himself fixed to any law. He knows that! It takes a long time to free yourself from believing everything you have heard, or believing everything you have read, or believing everything your teachers have told you. A painter really doesn't teach, for what can be taught can be learned without his assistance. If he is doing anything in the educational world, he is nibbling at the structure of it like a termite; that is, he is nibbling at the traditional process of the educational system which is based on a system of separating out facts from past creative actions and then playing the record back again. But, when playing the record back again, you see that what has been left out is the creative action. The traditional system of education is to isolate, very bloodlessly, but to isolate the creative spirit from the actual doing and from the intellect and emotion, and then the process is to put the three back together again like a jigsaw puzzle. You are getting courses which are meant to develop your intellect and other courses which are supposed to shoot you full of some creative spirit. That is where I come in, I am supposed to imbue you with creative spirit and give you some know-how. I crank up the battery eighteen hours a week. I think this is my fundamental job; I can't see it any other way. Other courses are primarily designed to give you know-how. This is the separating process that goes on no matter where you go. It doesn't make any difference whether it is a liberal arts college or whether it is a technological college, as it is here, for I have been in both and I have seen this happen too much. It is disturbing to a man whose work forces him to feel relationship of parts to the whole. It is not that educators place a low value on creative action, they merely cut the heart out of it by the traditional isolating process. The process of uncovering separate facts seems to further conceal underlying unity and destroy relationships.

For instance, educators are told that it is important for the student to have some creative experiences. Therefore, the students get "art." They get art, or they get music, or they get traditional forms of creative, so-called creative, fields. By implication, mathematics, engineering, physical education or some of the natural sciences and all of the other subjects, which are not listed as being traditionally art forms or creative fields, are not creative. The result is that the man—engineer or mathematician or agricultural specialist—is tagged with a ridiculous social inhibition all of his life because he has not had creative experiences. He has probably had just as many and more, or equally the same amount of creative experiences, whatever they may

be, as any creative artist, but they haven't been called that, so he hasn't had them! It is a very curious situation because, in the strictest sense of the world, creative—or to create—means making something out of nothing, which is beyond any man. From that point of view, man either discovers or he invents, but he doesn't create. If you don't take it in the strictest sense of the word, you are saying that there are creative acts and that there are non-creative acts, and that there are more creative acts within the creative acts, and then the quibbling begins. How do you know? This kind of taboo isolation, of not only the intellect from the spirit and the emotion, but the isolation of man's endeavors into creative and non-creative parts, is simply quibbling over what seems now more or less creative within a total creative process. You have seen this going on, distinguishing between pure and applied research. We spend nights arguing over who is more creative, Frank Lloyd Wright or Mies van der Rohe. One is too pure; the other too organic, too abstract, or too concrete. Silly? Really very silly!

When there is too much, something is missing, and what is missing attracts attention. Too much order—too much waste—too much chaos—too much separation—too much realism! We create because something is missing. It is not boredom and revulsion but a sequence of experiences, and we come to a point in our work where we find that the works of the people we once found fully satisfying are not so satisfying any longer. You have probably had some of your little gods in architecture. As you get older, you find that your particular little god is not quite as powerful a god as he used to be, and the field gets limited down to maybe one fellow who is carrying the load and then the day comes, actually, when he isn't doing it either. What is happening is that you feel the need for something, something that could be and isn't, and nobody else is doing it, and you wish that somebody else would do it because it is an awful lot of work. It is nice to think about having it done if somebody else would do it, but nobody else seems to even think about doing this thing that you are thinking about doing. This is really an important moment. It is a moment where you have to get down to work because you have an idea, an idea that is not original. Let's not get confused, because there are really no original ideas. You know the old gag that reading rots the mind, that to be really original, you must not have read nor seen. But how can you be original if you have not read? This is a twist in a vicious circle. We are not original, for nothing is really original. But, you have an idea that is original within you, that is, one which originates within you, and it has come out of a sequence of your own experiences and your own capacities. What is original in you are your capacities; spiritually, emotionally, and intellectually. This is yours right from the beginning. And, I can't come along, as a creative painter in an educational world, and imbue you—breathe into you—creative spirit. I can only say, "Come on Joe, be yourself." This is all I do all day long. I encourage you to let loose or to develop those capacities which are your own. I have no favorites, for, as I said to you before, I try not to play this quibbling game. You know, "My pop can lick your pop" and, "My pop is more creative than your pop." This is the kind of talk that separates man, it is part of the same kind of talk that develops into contempt, which is a very bad thing. I am sure that you all know what I am talking about when I say that you are developing a contempt, not for what the other man is doing, but for what he is not doing or cannot do. These isolated contempts of people, one toward another, develop because of not knowing and not understanding and not respecting another man's work in relation to the total design. George Bernard Shaw said, "An angel in heaven is nobody in particular." By that, he meant that an angel among angels is nobody. Everybody is an angel and they are all the same. A thing has no meaning unless it is directed toward a particular intention and has identity only by contrast to something else and the greater intention. The reason you are not respecting and you are not knowing, and you are not trying to understand, is because you have a too high regard for what you are doing; for your prejudice. You have a too high regard for your own little styles and your own little gods; a high regard as to what is important as a creative thing or as a value, a value in art or a value in politics, it makes no difference, and you quibble over it. You are so busy quibbling over this style or this value or this field or this profession and the value of each one to another, that you get drawn one away from another. You get drawn away from your sources of information and your sources of strength, not only as designers but as people participating in a greater design. An artist cannot afford to do that. If he wants to get his material out he has to be a lot more democratic about what exists around him; and quite freely so. The photographer Weston used to do photographs of the kind of stuff that was kicked aside by other photographers so they could get the traditional view of the mountains. He just paid attention to what was considered to be of low grade and not so important.

Educators don't want men to become separated one from another, they are really very anxious to keep them united. After all, A University is united—unit—university. They don't want to produce lopsided, half-baked specialists, but whole men; yet the process of learning develops habits of separation! It is a paradox. It is a paradox a little like the paradox of a baker of bagles. Do you know what a bagle is? You don't? You see, you are not cultured? You know all about Frank Lloyd Wright, do you? I'll get back to the bagle, but this makes me think of a Naum Gabo story about the men who graduated at the Bauhaus after their five years. They were Russians and they went back to Russia to do some work there, and, of course, they went to Gabo. They asked if they could work with Gabo and he said, "Well, I guess so." They gave him their background; five years at the Bauhaus and names of the men they had worked with. Gabo said, "I need help right away, I've got

to get this structure finished by a certain time and, if you will just straighten out this rolled up coil of steel while I go down the street to see somebody on business concerning the structure, I will appreciate it very much." So, he went out and came back about two or three hours later and there the men were, pounding this coil with a hammer, piece by piece, and straightening out all of the little bends. Gabo said, "What are you doing?" They replied, "We are straightening out the coil." "Well," said Gabo, "let me show you." And he placed it in a vice—any lady who has ever ironed knows this trick to get a ribbon straight—and pulled the coil right through it, and it came out perfectly straight, and the two men just sat down and wept.

Five years and you don't know what a bagle is!

A bagle is somewhat like a doughnut only it is hard like a biscuit and tastes like a biscuit, and it is shaped just like a doughnut and has a hole in the center, and it is round. Well, the paradox of the educators is somewhat like the paradox of a certain baker of bagles who was very worried about the bagle business. He was so upset about it that he couldn't sleep. He was tossing in bed one night and his wife said to him, "Morris go to sleep." "I can't," he said, "that doggone bagle business." She said, "Well what is the matter?" "The bagle," he said, "It's the hole in the center of the bagle! It's so big and I look at that hole—and such waste, such a big hole!" "Well," his wife said, (women, you know, are so much more realistic than men —you will find this later in life when you get to thinking more abstractly) "Just make the hole smaller." He said, "A hell of a lot you know about the bagle business. If I make the hole smaller, it takes more dough, and there is no profit."

This is the problem of the educators, they say technological students are too technological—"What will we do?" Industry is reporting back that the technological student is an extreme specialist; he knows how to do one kind of operation; he has no resourcesfulness, no imagination! When they change the rules of the game on him, he is sunk. He doesn't know how to adjust himself to change. So they say, "Industry has a lot of influence on education these days—do something about it, make them more imaginative." Now, to do this, we have a certain amount of time. What will we do? More dough—smaller hole? But more dough, that is more time and we don't have that time. Four years, that's a system—five years, that's a system. You can't start a system which will require ten years, that won't work and besides, they won't come to work—they won't pay their dough. They get tired and they run out of facts. The easiest thing in the world to sell is a fact. **Reader's Digest** is making a fortune selling facts. If we are going to sell more understanding, that takes time, tolerance, and faith. So you can see what they have to do. They decide to knock off a little time from this specialized technique and a little time from this specialized technique—all of these are special techniques that are designed to produce a particular product. And they do produce a particular product, like more milk-producing cows. By taking a little time off here and a little time off there, they will have time to introduce a course which is a "balancing" course; a course that will develop their imagination or make them more aware of the bigger patterns, the big woods. They are only able to see the trees now; we want them to be able to see the forest—the big pattern. What shall we give them? We will give them logic, art, humanities! Now, there is a big pattern! We will give them humanities! We will give them "Contemporary Civilization"! Then what happens? The student who is a product of an educational process which develops the habit of setting up separate territories—of divorcing parts from parts—is suddenly expected to relate parts foreign to his particular intention. The "balancing" course too often becomes **another specialized technique** in the mind of the student, because he has had **no a priori unifying method of thought.** The "balancing" course has an established significance, but it has no intrinsic significance until the discoverer relates it to previous knowledge. The significance of the course is **dependent on the preparation of the mind.** In other words, the student sits in class and wants to be able to absorb the little bit of knowledge that he is getting from an elective course, but, considering his separatist preparation, how is he going to do it? Where is the connection? Where is the underlying order? If there is no apparent accord between the intention that you have, this course has no meaning to you—or very little meaning. Your intention is the result of your past experiences and a certain amount of conditioning either while your back was turned or even while you were looking straight at people. Then you think that because of your pre-determined intention, "This is of no meaning and, therefore, I really don't have to listen to it." If you are going to become an extreme specialist, you don't have time, actually, to clutter up your mind with a lot of variety of experiences. So you find, in time, that you are actually denying your inheritance. And I am speaking of the real wealth that is all free, of nature and of intellect and of knowledge that has been given to you as a result of courageous endeavors over thousands of years, for, as Goethe said, "You only see what you know." I can't blame anybody for having their particular intentions; there is no guilt attached to this; there is nothing good or bad about it, and I am not putting it this way. I am only saying that you are born with certain potentials and you know inside when these potentials are not being used. You kid yourself about it, you say, "I'm being realistic and I can't follow through with all of these things that I would like to do." The result is that, in order to rationalize this situation, you are obliged to submerge what is really original in you—much like the worm who was swallowed by the robin. Do you know that Mehitabel story? About the robin that nipped the worm and the worm didn't like it at first? This is you as a little child—"No, no, you won't make me do it, I won't do it!" And then —WHACK! That is you at the age of two, three? And, as the worm progresses into the inner workings of the robin, he

feels that the robin is perfectly right, not only in nipping him, but he believes that everything that the robin believes is true. There is a very torturous half way point for the worm that is half in and half out. It takes a lot of courage to rip yourself in two and say, "I can keep that much from going in." But it takes a lot of courage to do what is **you** at anytime.

This is the problem we face—you face it and I face it—in education. The problem is how do you develop in an early age the ability, the courage, and the volition to affirm yourself no matter what. How do you develop the ability to relate, to absorb and enjoy all of the factors that exist around you? For they are free—as I have said—they are free as the flowers. I am not talking about wealth in the terms of cash, I'm talking about wealth now in the terms of all the radiance of light, not only the joy of the sunlight, but the energy that you can get from it, the energy that you can get from gravity. Wealth in the terms of your inner abilities, your potentials both intellectual and spiritual. Wealth in the terms of all the know-how of man who has preceded you which is yours without any of the pain that went into gaining that wealth—prepaid right here at your disposal! How do you take all these wonderful things? How do you choose and select from them democratically and not get confused and use them to affirm what is you? This is a problem!

Affirming one's self is a very old idea if you will just be careful when you are reading books. Read books by anybody who has ever succeeded; despite succeeding themselves, they will tell you, "This is it!" This is the one thing that you must do, either that or get yourself so successfully diverted, as a success, that you no longer are yourself and it won't make any difference. You are the robin, so it doesn't make any difference. But how do you reconcile what is original in you? And you are original and unique—there isn't a plant form that is the same, not one dandelion the same as the next, and not one man the same as the next. Your own particular uniqueness—how can you be both part of it and a spectator observing it? Because this is really what you want to do! Spinoza said, "The endeavor, wherewith everything persists in the endeavor to be itself, is the essence of the thing in question." **The essence of the thing in question.**

There is a story about a boy who was born on the Hudson River and, when he was a little boy, he was sent to school in Grotan because his father went there. At Grotan the boys used to say, "Hey, Bill, come on, just be yourself." He graduated from Grotan and went on to Harvard (his father went there). Since his father was a very important man and he came from a very important family, the boy got into the fraternity there—THE Fraternity. When he got into the fraternity, the boys said to him, "Now look Bill, all you have to do is just be yourself and don't try to do this or that or the other thing like we are doing, just be yourself." And he went through College that way, graduated, and immediately went into business on Wall Street—his father's office—stock market—junior partner —had an office. The other partner said, "Now Bill, here is your office. Don't try to do anything, just be yourself." So, there he sat with his feet up on the desk trying to be himself. One day, he got tired of sitting in the office and he took his feet down off the desk and went for a walk. He walked from Wall Street over to the market section—not the stock market—the other market. Just as he was coming around the corner, he saw a terrible sight. He saw a truckload of pigs coming around one corner and another truck loaded with chickens coming around the other corner. They met head-on in a terrific crash. Blood all over, pigs squealing, grunting and groaning. A terrible sight! He stood there fascinated, and somebody, nobody knows who, put a knife in his hand while he stood there, and, before he knew it, he was gracefully cutting those pigs up into the nicest pork chops, hams, sections, bacon—he was a butcher all his life and he is a very happy man today. But, you might not be that lucky!

There is a funny philosophy that exists—it has been going on for many years. It is really a primitive philosophy—you've heard it—the sink or swim philosophy. There is no use trying to learn from my experiences or his experiences or any other man's experience; the only way you will learn is by your own experience. Now I'm a great believer in having many experiences. Once I recommended that perhaps a course in animal husbandry wouldn't be such a bad idea for some students in the Design School—they didn't accept the idea. I'm all for having a variety of experiences, just to do them, just to get into the habit of allowing yourself to venture, just to keep yourself from growing rigid and freezing your designs. I'm all for that, and I believe that the only actual things are **your own experiences.** You can have fantasy dreams that seem fairly actual but it is by the actual confirming—affirming—of a movement, by moving—by moving in space, by creating with your hands—**anything.** I don't care if it is shining the car because you feel like doing it that day. These are very wonderful experiences and they all add up. I do believe, though, that there is something in another expression, "A wise man learns from other people's experiences and only a fool learns from his own." There is a good deal in that, but you will never relate experiences that way, for my experiences are of no use to you unless I can relate them in such a way that they are comprehensible through your own experiences. If I don't make them comprehensible through your own experiences, then they are really of no use to you. I do believe it is possible to learn from somebody else's experiences, but you have to have had some way, some common denominator, some clue, something which unites you with this other man's experiences. Then you can say, "I understand, and we can go along from here. I can gain from your experiences because I can relate your experi-

ences to mine." If not, then again it is just a lot of words, much smoke and no fire. Smoke all over the place. This is the big problem, I think. Can we establish some method of relating the experiences of men who have succeeded in affirming themselves so that their endeavors can be serviceable to your future design efforts—of not just the facts but to equip you with an understanding of the creative effort as well? The major amount of attention in education is given to the design realizations of the endeavor—the "finished" product. Very little is given to the endeavor—the design process—to what the men who have produced this by-product have said. And, even if you read what they have said, you sometimes have difficulty in relating it to you, for these were great accomplishments. You can relate it in a romantic way, but how do you relate it in such a way that it is really of use to you, so that you don't have to go through life in this primitive fashion of here I go, sink or swim. Plunk! You don't know how to swim. And it happens too.

Here's another story—the story of a man who went swimming. He didn't know how to swim and he almost drowned and somebody dragged him out of the water. As he was lying on the beach very exhausted and very panicky, he said, "I swear right here and now, I'll never go into water again until I learn to swim." I might add, you can drown very easily near the shore.

The "Anticipatory Design Process" was designed with the hope of reducing the probable number of haphazard sinkings.

The "Anticipatory Design Process" came out of a variety of experiences and years of trying to relate things to people and all the while feeling that I ought not to try because I don't like explanations. I don't like the confusion explanations cause about what is happening in art. I don't like the laws the aestheticians make which act like ancient but still enforced building codes. A man tries to create something and here are all these laws that were made by an aesthetician about what is beautiful and the venturing artist, who is trying to really move on, has to break the cake of custom and break through all these imposed laws that some aesthetician has written. No artist has written them because artists who have to fight the fight of breaking through prevailing customs are certainly not going to play that game. They know change is constant. Sometimes, I feel like Louis Armstrong who said, "If they have to ask what it is, they will never know!" So, in this sense, I don't like explanations. Explanations about art or any created things always come after the facts and people are drawn away from the endeavor to the fact. They are also drawn away from the creative spirit to the fact. It is always the fact that gets the major attention and not the endeavor, and the fact is then idolized and fixed, as a law; it becomes rigid, and people want the security of this fact and say, "Let's hold on to the fact, by all means let us cling to this fact because there is very little to cling to here, but let's get some facts we can hold on to and don't change them." This is a status quo situation. And artists, if they are anything, are pro-change; they are forward looking, they have got to be. Pro-change! I think it was Heraclitus, the Greek philosopher, who said, "you can't bathe in the same stream twice," and he was a very wise man. You can't use the same design twice—you know honestly that you can't use the same design for another site and besides you are not the same designer by the time the next client comes along. You are a different person—a constantly changing person.

I remember Buckminster Fuller standing up one day saying, "All you see of me that was around seven years ago are my glasses." This was quite true, his skin had changed, everything had changed about him. His opinions had changed. I think I have the right to contradict myself, that is why I'm hesitant to write a paper. My textile students have been bothering me for years by saying, "Look, why don't you do a book on it." I don't want to do a book, really, but I have to do a book or I have to come here and speak tonight because if I did not, then I would just be spinning my wheels, developing steam. At the moment, I prefer to move to the next station. I have an idea, something inside me, and I am just hanging around. It is a wonderful idea, but I'm not going anywhere with it. I'm just happy within me. Some alcoholics do this. Their only intention inside is to escape from affirming themselves. They think they are failures and this is hard for them to do. It's tough! They have to get themselves completely isolated from any situation that demands an affirmation of themselves. They do this by going out and getting a bottle of whiskey and drinking it. When they are completely involved with the whiskey, then all of their fantasies are perfectly true and all of their would-be accomplishments are so. They are the greatest writers in the world, the greatest painters in the world and the greatest lovers in the world and the greatest anything they want to be. That is a very attractive situation for a lot of people, but as I said earlier, you look around and you see too much of this, too little of that, and not enough or not anything done about some things that you feel could be or do exist. Then you have to do something positive about it and you don't really want to, but you have to take your coat off and go to work. Let's get back to this problem of how we relate the wisdom, the experiences, of men who have succeeded in affirming themselves to our experiences so that we can be a little more "hep" when it happens? So that we can have courage, wisdom, and understanding instead of the sink or swim cold duckings and, what Bucky Fuller calls the series of short circuited burnouts and blowouts that come from not being prepared. Can we do something about this situation? Can we take their wisdom and some of their methods and part of their techniques? Everything is free, and we don't have to worry about being plagiarists or not being original. This is a difficult thing, how can you reach the answer once a question, which is really the answer, is asked; the kind of question which can be answered

because you know about the existence of the parts that will help you to answer the question. For example: How do you arrange a successful dinner party? You like to have a diversity of people there. You don't want all the people who know each other and think alike and so on. That would be pretty dull! You know it is going to be rather dull in advance, but you would like to introduce some new people, people who really may not get along too well. But you want all of these people to be themselves as much as they can. You don't want them to be wallflowers, you want everybody to be as vital as they can be. What kind of situation can you develop? If an indoor party is not the solution, maybe you had better have an outdoor picnic where everybody feels a little more at home. What I am saying is that you set up, in advance, a situation which you know will allow the most freedom for all the parts. I use the phrase "in advance" because you anticipate in advance the best possible situation for these elements. The Jones' and the Smith's . . . I'll sit the Jone's next to the . . . and I'll put the . . . and I'd better have . . . and plenty of whiskey. You've got someway of making harmony because you have a lot of diversity. You want harmony, you want diversity, and you want a successful lively evening. That's your goal for the night! But in spite of all your planning, it's a dull evening until some uninvited, vitalizing stranger chances to come in because the lights were on and the door was open.

I'll put it to you another way. You anticipate the need of a date and you know what your intention is for the night. You have a particular kind of a date and you know a little bit about this girl. But, what you don't know, you find out. You go around and ask people who do know. And then you find out you had better not appear in your old broken down car for this particular girl—you had better have a fine limousine and a corsage will help you a good deal. You have an intention and you anticipate the possible affirmation of this intention. It is possible and you are doing something about it, you are preparing the best you can. This is designing! Where did this intention come from? Out of what did it come? I mean this intention to have a date. It came out of some need. If I were to ask you to intellectually write down this need you would say, "Go away brother, I don't know, I just feel like a date." That's it! That's the way artists have to answer almost everytime they are asked, "Why did you do that?" They can give an intellectual answer after the fact, but only after the fact. Sometimes you do know why, when there is an urgent need. You know that people are starving in other lands and that you need to get some food over there, but it is not pressing. The boil is under someone else's arm! Everytime there is a need to affirm yourself and, when you feel this need to affirm yourself one way or another, you anticipate what your intention is. That sounds silly! Picasso said in one of his writings, "I do not search, I find," which is about the way it goes. The cure comes before the ailment.

You start a painting—you know inside what you want before you start. You keep putting things in and taking things out, wiping out here and wiping out there and then somebody comes in and says, "Don't touch that part! It's perfect, don't touch it! Leave it alone." The next day they come in and it is all wiped out. You have worked three weeks on this part, Maybe four. A lot of love went into it, a lot of feeling. It's beautiful, but that part doesn't belong with your intention, and you know it. It's confusing in a way, but you have to give up this part because it didn't belong to your intention. This business is quite true, for you know inside what it is that you want just as much as you know inside what you want when you start out on a date, and just as much as the Wright Brothers knew what they wanted to do, and just as much as any man who has any volition to do anything knows in advance what he wants to do.

Let us say that you anticipate ways of making money. You feel the need. There is always the need behind the anticipation, but the need is not always conscious, sometimes it is subconscious. Sometimes there is the need for publicity, vanity, or notoriety. People do some peculiar things in order to achieve their need and all the while they will never admit that this is why. They don't even know that it may be why, that the need may drive them on to make particular kinds of performances. Sometimes the need is deep down, such as is apparent in some terrific poetry I have read. You wouldn't think that a poet is operating the same way, perhaps as an engineer, but basically he is. He has a need inside and the ability to put down, to affirm, what he feels inside. It may be a tragic feeling. It may be a statement, a philosophical statement basically, but he gets it down on paper. That is the important thing to get it down—get it out—move!

You go into a shoe store and put your little foot out. The shoe salesman is working on commission. You need shoes and he needs the commission. Then, the designing begins. The designing actually began way before that. The foot was designed but they weren't the only things being designed. The whole store was designed to sell. This process of fulfilling the sale is going on while you are finding the shoe which would approximately satisfy your particular need. More comfort—more wear —less cost—it is an endless chase sometimes, but what joy when you find just what you were intending to find. The shoes which were discarded because they did not fit or because they were to expensive were not failures. Looking at it from another viewpoint, your feet were to big or your bank account too small.

I think students—students who are in the so-called creative field—get confused by a creative act, whether it be building or a painting. They get confused by the need—the deeper need—behind the creative act. By that I mean that the need, the desire, is not to be creative as such because this is silly. A man doesn't start out by saying, "I am creating to be creative"

or "I am creating to create a creation." This is not it! There is always some intention behind the pre-determined need. The deeper need is to affirm an awareness within the limits of that particular circumstance. A painting or a building is only one of the by-products of a trail that this man leaves behind. Form follows intention, not function. Form in another sense is a repetition of a man's particular idiosyncrasies no matter what the intention. Sometimes this is called style. Critics often confuse style or form with the intention; their intention with the artists intention; and the realization with the creative effort. We must be careful not to confuse the design realization with the creative act, or the creative act with a desire to be original. I've seen this happen too much. You know that children are not trying to be original—they are not aware of the art market —they are not doing the 'doodle' so that critics will recognize that it is original. It is one powerful bit of energy intention put down all at once on paper—complete—packaged—Bam! There are many books written about childens' art—the art of children —and you can read and read and read and it won't do you much good, at least from the point of doing what they did. If you are reading those books or if you are studying childrens' art to be creative or to be original, then you are off the beam. And if you are patterning your life after Mies van der Rohe or Frank Lloyd Wright or Michaelangelo or Picasso or anybody else, you are doing it the hard way. It is like trying to chew with someone else's teeth.

I think I have told all of you the story about the time I was in the War. I was overseas along with two other artists. We were asked to do a particularly tough creative job that called for real artists. This job was to forge the signature of an important general so that he could send out letters of congratulation for the years' work to all the colonels, in the Theatre. I guess there were about 500. I did 150 and the second artist did the remaining 350, because the third artist bought him out with all of his cigarettes. The third artist said, "I'll give you all of my cigarettes if you will do mine." This was a terrible chore, for the second artist signed General ——— 350 times. It is so easy to write you own name—much easier!

Let's enlarge a bit. You are you, and Frank Lloyd Wright is Frank Lloyd Wright and he is designing his way and you must to play your game. Part of your game is knowing yourself and the wealth of your inheritance. This is not easy because you know what you want to do, you really want to affirm yourself, not in Frank Lloyd Wright's eyes, but with your own. Oppenheimer says, "The important thing is to ask yourself the right question." By that, he means that by asking the right question you are anticipating the answer. The answer is a matter of time, courage, faith, intellect, and spirit; and you come up with the answer because you have asked the right question. You have asked this question because of your total experiences and out of your total experiences you are aware of what could be, and you say to yourself, "Could this be?" You ask the question and then you proceed to answer it. It happens in industry—it happens everywhere. Henry Ford asked himself a lot of good questions. He said to himself, "I wonder, I am being pressed and I don't have the money at the moment to buy warehouses. I'm bringing stuff in from all over the world, and I wonder if I could timetable this. Could I timetable this so that the ships that are going to arrive will be floating warehouses, so that the trains will be moving warehouses—the parts will all arrive at a timetable time and I won't need warehouses. The very things that bring them could be the warehouses and I could save a lot of money." And, he did it! Let's put it another way, "If I paint the red here and the yellow here, I know what I want. I need some yellow ochre and some red and this tone, this shape. I will get that because this is what I want." Henry Ford just did it on a larger scale. So, again I say that you always ask yourself the questions—**you anticipate the answer by asking the question,** by knowing or feeling the need, by knowing what you want. How can you be decisive or resourceful or anything else unless you know what you want to be decisive or resourceful about?

Designing, to me, **is a process of objectively fulfilling an anticipated need—intention.** Whether the need be large or small, conscious or sub-conscious—felt or known—this is designing! And, if this is designing, then all men who strive to fulfill are designers, and, if all men are designers, then we can say that God created creators, and maybe this effort is our fundamental task. Now this isn't original—not a thing I have said is original. Jesus said you must use your talent—new bottles for new wine. **Your** talent! Let's not think traditionally about words, let us not think of talent-art, talent-music, talent, potential, abilities. If all men are designers and all men go through this process of endeavoring to affirm, to fulfill, to **objectively** fulfill an inner need, then we have something harmonious. We can then start talking to each other, can't we? Do you see what I mean? We have a common experience, a unifying method of thought, we share an experience as designers energizing a finished design! I'm sorry this group isn't mixed (you are all from the School of Design) and I wouldn't care if this were the whole college, all men are designers in their own ways. The process is constant, the only variable is the frame of reference—intention. Sometimes you might call it being cunning, sometimes it is on a very high plane. The Designers of the Peace Plan, you have heard of this—or the Architect of the Peace Plan. You have heard the word Design used in many ways but too often it is associated with particular fields and is not true, as far as I am concerned. I say all men are designers and the reason that we have had difficulties in accepting this idea, although it has been said in so many words over thousands of years, is because we are apt to relate the process to great realizations only. A successful designer is too often considered to be the man who sets the final keystone in a structure built by countless, anonymous design efforts.

Herman von Hemholtz, the great physicist, mathematician, scientist, when offered a high award, told a story about a Greek sculptor who had carved beautiful work but refused high acclaim and reward because he felt the men who designed the chisels were more deserving.

I could go through the history of art and tell of the number of times artists have come up with affirmed design realizations, which to the public were unsuccessful. The artist, with great courage, presents his work to the public, and the public, who has spent a great deal of time getting informed about beauty and all the codes and all the laws about what a painting should look like, looks at it and says, "This? This is terrible. This is a failure!" Is he a failure? Is he successful? What is success? The fact that the artist moved, that he ventured, that he did **do,** to me, is extremely important. If we turn the end product over to the field of science, and if it is an experiment and it is a failure in the terms of empirical experiments, a lot of information comes out of that failure that makes for a successful performance. If this experiment is inadequate in terms of a particular point of view, or a particular goal, then it is a failure. It was an effort, it was an endeavor and the man tried and did the best he could. Known failure creates effort and, very often, out of that effort, comes some information that later developed into a great contribution which energizes man into new design realizations.

If we are to evaluate success or failure, we have to evaluate it from the point of view of intention. That is the story of the Ugly Duckling. If you ask designers to build a plane to fly at a certain speed and at a certain altitude and carry a certain number of men and a certain amount of equipment—and it does—it is then successful. If it doesn't achieve all of the requirements, then it is not successful from the point of view of the intention, but it is very useful to someone else. So always, success or failure has to be judged from the point of view of the intention. Intention is extremely important in a greater way; it is extremely important to have intentions because **intentionality creates vitality** and, if there are no intentions and you have the opposite of intentions—of desires—of movement, which is static, inertia, despair—a kind of sitting around in defeatism. It seems to be a kind of law that the more intentionality a person has, the more vitality he has. Intentionality can be weakened primarily by ignorance and fear and lack of belief; you can isolate creative spirit or the spirit; you can get into a situation where spirit is kept out and, thereby, weaken it; or the intention may be premature and must wait on time and more experience. It can be weakened by lack of successes if you fall victim to traditional ideas of what a success is. In other words, if you are sensitive to public opinion up to the point where your efforts, which are not acceptable to public know-how, are not constantly accepted, there is a great wear on your vitality and your intentionality. Intentionality shows up a good deal today in the technological field. This is where the greatest vitality of our time is in this country, and probably in the world. The reason it is so full of vitality is because anything you have ever thought of producing, we have produced. Success—success after success—has created a strong belief which affects our endeavors much like the Homeric legends affected the Greeks. That's why it seems to me a very strange thing that, in education, they call upon the creative painter or the creative poet to imbue technological students with creative spirit and all the while the most vital creative form, today, is the technological production of our time. In contrast, it is the painter who is dealing with things that are meaningful, for the most part, only to himself, who can't expect an audience. We have gotten as far as intentionality, intention being anticipated out of needs, sub-conscious or conscious, and the effort to objectively affirm—and by objectively affirm, I mean move —don't spin your wheels with your intention, with your nice bright idea which never gets done, but move out in the face of opposition because you know that there is going to be opposition in order to affirm this intention. If you move out with your bright idea and not all of your equipment and not all of the factors that exist that concern this particular intention being well absorbed and **part of you,** then you are in for a lot of short circuiting; you are in for a lot of opposition; and you are in for probably failure.

DESIGNING IS THE PROCESS OF ANTICIPATING AND FULFILLING OBJECTIVELY A FELT OR A KNOWN NEED. In the process of fulfilling objectively the felt or known need, all of your intellectual, emotional and spiritual capacities are encompassed by this process. It calls for all. It calls for knowledge through experience of all the factors pertaining to this particular intention. The process is to select, intellectually and intuitively, from all the available factors that exist, meaning those factors which will fulfill this intention! Buckminster Fuller suggested that the problem is to do this with the minimum number of factors. It isn't easy. In the Navy, they want to hit a target. They have two kinds of readings, the reading of the other ship and the reading of their own ship; its movement and the other ships' movement, timing, and the reading of the gun itself. Unless all of the factors are in, they might just as well shoot straight up in the air. They have just as much chance of hitting that target if one factor is missing by shooting straight up in the air. And, if some clever fellow gives an extra reading (factor) they might just as well shoot straight up in the air too. It is said about a painting that when there is too much, something is missing; when there is too little, something is missing. How do you get it just right? Is it a state of mind? You feel about a painting that if you took a part out it wouldn't make the least bit of difference or you could put in another part and it still wouldn't make any difference about the painting. You know. The problem then is to get down to the minimum number of factors pertaining to that particular intention.

The way you get into a lot of confusion as designers is that you read about the success of one man doing his designing in a particular way, but his is an entirely different intention. That stream has flowed by. You are going to try to bathe in the same spot, in the same stream, as this guy over here and the stream isn't even the same. Given exactly the same intention, you are still not going to be in the same time situation. It's impossible to pattern a situation exactly after another man. You have to be able to anticipate what you want, to be able to select the factors that will give you your particular solution, not too much, not too little. This goes for anybody. Awareness of factors increases your range of intention, but also makes selection more difficult. The parts which are interdependent are the factors you should select—one not being any more important than the other. You must get this straight, you must always be democratic about the things that exist around you. Just because you don't choose particular factors at this moment, and because you have a particular intention, does not mean that these other factors you are not using are not important. They are equally important. Sometimes you play favorites among factors. You fall in love with some of your factors and you get in trouble because every factor you choose is equally important. Although it may not be the greatest portion of the fulfillment of that intention, one factor, seemingly unimportant to you, might be that little factor—that little bit of salt—that is extremely important. Sometimes you fall in love with one factor and you get blinded by this factor. You are so accustomed to this factor that you are not really looking to see that it is too much. It has been around you so long that you are accustomed to it in a way.

There is a story about Rodin the sculptor who finished a figure piece one night and he was very excited about it. He had worked on it a long time and he woke up all of his students who lived in his atelier (this was in France and the students studied right with the master). He pounded on the door, and the students came streaming up rubbing their eyes, very sleepily, to his studio. Rodin said, "Well, there it is!" They came in one by one, looked at the figure piece, and all made the same comment. They said, "Master, what beautiful hands!" "They are exquisite hands." This was high praise and given with real sincerity. It went on for about ten minutes and then Rodin seized the chisel and lopped off the hands. He had to, because everybody, of course, was looking at the hands and here was a whole total intention, and the total intention was not being comprehended. And this is what happens sometimes when you fall in love with a part. It is not that the parts aren't meaningful; the parts are very vital and meaningful in relationship to each other and the intention. Leaving the intention out, they are meaningless. They become vital and meaningful when they are brought into this intention. The point of intentionality is to get your intention clear!

What are your intentions? There is another story about intentions. A man went into a Third Avenue restaurant and said, "Waiter, bring me a bowl of noodle soup." The waiter brought the bowl of noodle soup and set it down and the man started eating the soup. "Waiter!" The waiter came back. "Waiter, this noodle soup is much too salty!" The waiter looked at him and said, "That is not noodle soup, that's cabbage soup." "Oh, oh, for cabbage soup, it's just right."

You go into a rage about certain works of art, or you go into a rage about certain political happenings, or you get upset about this, that, or the other thing that is being done by somebody else. You say to yourself, "I don't understand what they are doing; I don't understand what Einstein is doing; what he is doing, is way beyond me." That is quite true, it is very complicated; it's a very highly specialized, special technique and there are very few physicists who know what he is doing. But the point of it is that you know, **in essence,** what he is doing. He is doing what you are doing; he is designing! He has an intention and he is trying to fulfill it and he is fulfilling it the same way you fulfill your intention, not with the same tools, but ultimately for the same purpose. I don't mean just in terms of architecture, I mean in terms of design for living. If you want to talk to Einstein, you don't talk special technique language with him, you couldn't last very long and neither could he; but you talk to him as a human being who is going through the same process of anticipating, venturing, doubt, hope, that you are going through. If we can establish a relationship of design endeavors, there is no need for you to be isolated from the other man just because he has a label on him which says engineer. There is no need for an engineer to feel uncomfortable when he is around an artist, and there is no need for the educators to say to the Technology student, "Look, you uncultured technologist, go get some art! You are not creative, you don't know what an artist is doing, you don't know about art." There is no need for the artist or intellectual to get himself in a state of mind where he says, "Technology—NO! This is brutal, inhuman machine stuff."

There is a need for unity within man of intellect, spirit and concrete doing; unity of man in spirit not in standards. If there is too much separation, as I said, something is missing and you don't have to be told what is missing in this College. You don't know the students in other schools, nor do you have an interest in what they are doing. I think you are trying to work up an interest. I'm not talking about rah-rah-rah spirit at football games; I'm talking about just plain rapport. What I am proposing is not easy. It calls for super-intentions; it calls for the sacrifice of loved or highly regarded factors; it calls for courage and tolerance and faith.

The Chinese wisely recognized the need for order. They had a philosphy that was based on the idea that each individual must put his own house in order, and eventually, by doing so, they would soon have their country in order and then the universe in order. There was no impingement of intention or

recognition of constant dynamic change in man and nature, which cosequently led to the disintegration of their civilization. However, it was a philosophy true to the nature of that time. In our time we must also work for universal order in acceptance of change and the necessity for diverse intentions of man which cause tensions. This is not easy but an insincere, rational peace is preferable to irrational, sincere war. Out of the long tension may come a greater comprehension and more sincere order of relationship between parts. Some people would like us to escape tensions by returning to the monuments of the past. They say, like the poor man in a cemetary observing a grand tomb said, "That's what I call living!" Living requires personal acceptance of tension, diversity, and even despair—personal effort. What I am saying to you is that, if you like, everything is positive, even opposing intention. Even despair can become a very positive thing, and you meet despair when you are trying to fulfill yourself. But, when you reach a point of despair, you are despairing **because of something.** At least you are aware of what the something is and there is no place to go from despair other than up. There is a bottom, and out of despair—the real despair—comes some terrific action and faith. Any way you look at it, you have positive factors to fulfill your intentions whatever they may be. You will find them all over. You have your energy, spirit; you have the know-how of all men; you have intellect; you have your chemical elements; there is no way to go but forward. You can't lose your chemical elements. You have got your junk yard—you just melt down the scrap. You are worried about it and your copper goes up above ground—no longer below—so you bring it up—it's still there.

There is an old saying, "More lovely is an ugly patch than a beautiful hole." That is, we are makers of ugly patches relative to the original creative act. When we become aware of a hole in our comprehension, of phenomena around us, we invent a patch and these inventions of patches are making a beautiful big design, and it is being made by the creative effort of **all men.**

End.

THE ARCHITECT AND AGRICULTURE - TWO

"COMPREHENSIVE DESIGNING DISCERNS, FOR INSTANCE, THAT FIELD ROTATION OF FARM LAND IN POLY-ANNUAL RATHER THAN ANNUAL CYCLES CAN BE EFFECTED BY GEOMETRICAL CONTROLS."
R. BUCKMINSTER FULLER

Kenneth Goldfarb and John Kina
Fifth Year Students
School of Design
North Carolina State College

An article entitled "The Architect and Agriculture," by Buckminster Fuller, first appeared in this magazine in the fall of 1953. It was a statement of the one month problem which he was to conduct with a group of twelve architectural students during that winter. Kenneth Goldfarb and John Kina, the authors of this article, both worked with Mr Fuller on this project, and here they have attempted to record for us some of the results.*

Rapidly depleting topsoil reserve, uncontrolled weather phenomena, insects, and plant disease have harangued man since organized agriculture has come into existence. Over two thousand years of agriculture has seen no radical change in the methods of agricultural technique. More horsepower behind the plow, but still the plow. Atmospheric controls other than the costly green house enclosure have not been attempted. The ever static checkerboard pattern of land culture remains as the accepted method. Recent developments of the plant geneticist, new chemical fungicides, controls, nutritional evaluation of human and animal fuels, and the availability of atomic energy to the agricultural world offer the agriculturalist exciting new approaches to the solution of his problems.

Thus with these new developments a new framework incorporating new concepts must manifest itself. It is folly to attempt efficient utilization of these new methods within the old framework, just as it is to attempt the use of nuclear energy in an internal combustion engine.

Feed back control systems have made possible heretofore unknown levels of quality in industrial products. Gigantic fuel cracking plants can now operate with electronic impulses relaying minute process deviations otherwise undetectable by the human eye. The farther industry develops beyond the nonsensorial range of perception, the greater the insufficiency of the human impulse becomes. Quality control based on mechancial impulse reaction is becoming the tempering device for a rampant industry.

Agriculture, as is indicated in its tendency toward specialization, is concentrating and will increasingly concentrate on higher quality demands. Today the emphasis as "A" grade, "B" grade, U. S. Prime, or vitamin unit content has become the evident symbol of this new trend.

Just as in petroleum cracking plants, it will become necessary in agriculture to depend less and less on the judgment of the relatively inefficient human eye and hand. Erratic soil agriculture producing low nutrition value foods must be eliminated if an acceptable world health standard is to be achieved.

In view of such demands it is reasonable to think of vast automatically controlled chemical growing units producing not only for human use but for animal consumption as well. Horticulture and agronomy liberated from soil techniques can now divorce themselves from flat land wedded agricultural patterns; thus utilization of spherical atmospheric valving controls makes economical the use of volumetric space as opposed to flat patterns.

By discarding the mysticisms and inaccurate assumptions of organic dirt farming, highly controlled nutritional products can be produced. Vast areas of unfarmable land can be brought to fruition as fast as physical facilities can be set up. Agricultural products can be grown immediate to the vicinities using them, eliminating present shipping costs, nutritional leeching, and food spoilage. Soiless chemical farming coupled with environmental control mechanisms also makes possible a predictable and dependable food supply system. Production, therefore can then be geared to consumption, rendering the static storage unit unnecessary. In fact the growing unit itself can act as a self-contained mobile storage unit.

Alleviation of famines in such countries as India and China is the responsibility of each of us as members of the human race. The solution to these conditions on an international basis can be a substantial contribution towards world peace. Food shipments sent to lessen what are catastrophic conditions, either as charitable or political gestures, are far from adequate. Tediously slow agricultural build-up programs are also only a partial

answer.

Growing machines constructed of light weight materials are a possible solution. Demountability and performance per pound resulting in economical global transportation to stricken areas become prime considerations in such a system. Mechanical advantage and not horsepower is the need.

Above all, not only an understanding of the individual parts of the agricultural complexes is sufficient, but how the whole results from the combination of these parts is of the essence. Assimilation of the parts into an organized whole points towards the architect as the logical coordinator; for if he can deal successfully with complexes such as cities and industry, he then can extend his talents into the field of agriculture. Along with provisions of shelter, food supply and the distribution of it is a basic factor of world stability. It therefore behooves the architect to make an accounting and accept this responsibility as a truly socially-conscious individual.

The accompanying photographs are a record of the more important phase of activity during a natural collaboration between the architect and the agriculturalist in an effort to arrive at a means of environmental control for plant life. During the course of activity it became evident that the architect could operate effectively as a coordinator in a sphere heretofore left to the engineer and to the specialist.

The structure used was a 36′ diameter four frequency geodesic dome composed of 1″ x 2″ yellow pine members. These members were held in position at each vertex by ½″ width black bailing straps. Each member of the vertex was properly mitered not only at the contact faces but also in the strap retention notches. The actual erection time for the frame was approximately 50 man-hours. The structure was erected from the top down by suspending the cap from the mast and adding to it circumferentially. As a natural property of the curvature of the dome, the members fell into place easily requiring only minor base adjustments upon completion.

The solution embodies many important ideas worth of additional discussion such as the ventilation system, the performance per pound factors, demountability, and compactability. In this writing, however, ventilation and covering are the two which we shall elaborate upon.

The lightness of structure (800 lbs.) made it possible to develop a new and effective ventilation system. The complete dome can be raised 12″ from closed position by means of a manually operated hydraulic jack mounted on a centrally located mast. Ideally, the lifting device could be actuated by a thermostat and other controls which take into account wind velocity and direction. Actual air movement takes place through a circumferential opening strip enclosed with a flexible saran screening for insect control. Combined with the two suspended plastic skins and a pentagon valving cap, this circumferential strip allows many variations of air motion to take place. **

Three separate attempts were made to provide an effective covering by suspending the prefabricated plastic skins from the 1″ x 2″ yellow pine frame.

"Saran" was the first plastic film used in two envelopes of 32′ and 34′ diameter. These half spheres of plastic film were suspended from each vertex on the frame by means of a nylon cord and a hard plastic disk as shown in figure 3. Failure occurred in the skin itself at the various points of suspension during erection and immediately after. The complete skins remained in position only long enough to allow photographs to be taken.

"Polyethylene" was used for the second trial in one skin of 34′ diameter. The same suspension detail was employed with the same result. After eighteen hours in position the skin failed at the points of suspension.

"Mylar" was the material employed in the third trial; but, in this case, the suspension detail was revised as shown in figure 5. The light spring and turnbuckle replaced the nylon cord, and an aluminum disk replaced the plastic disk. The turnbuckle and spring facilitated tension adjustments at each vertex. Each suspension point on the skin was reinforced with cheesecloth. Reinforcing strips of mylar were placed on the skin along lines between the suspension points. The suspension detail in this case was adequate as evidenced by the fact that no failures originated at the various points of suspension. In this third skin, adhesive failure occurred along the lap joints between the mylar sheets. This skin remained in place about ten days of varied weather conditions. Since this failure was due to a faulty adhesive (easily rectified with heat sealing) and not due to improper material property, it seems that this may have been the answer. The next trial will tell. A heat sealed envelope is now under fabrication.

We feel that this project is unique in that the three covering failures have provided an opportunity for students and faculty to carry on a kind of progressive experimentation. Anyone who had been conscientiously engaged in this particular design realization soon came to understand that each so called failure was but a logical sequence in research development techniques. In all probability had skin No. 1 remained in place an intensive search for more efficient coverings would continue as it would in any normal scientific development process. Intermittant experimentation has extended over a period of one year and will continue until this particular solution of environment control is definitely validated.

**The group consisted of: Alfred Allred, Joseph Costanza, Clyde Dorsett, 5th year students; Pete Barnwell, Kenneth Goldfarb, John Kina, Morris Nakayama, 4th year students; Bill Kaplan, Harry Moser, Bob Wilkanowski, 3rd year students; and Charles Sides, Howard Kahn, 2nd year students.*

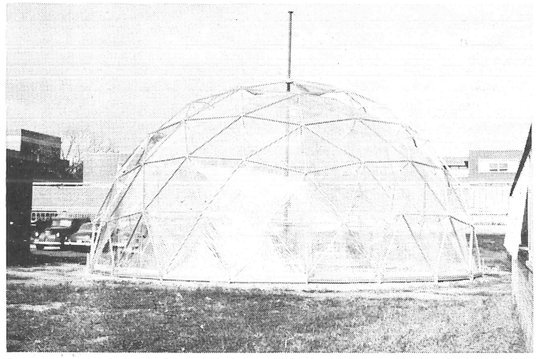


Figure 1

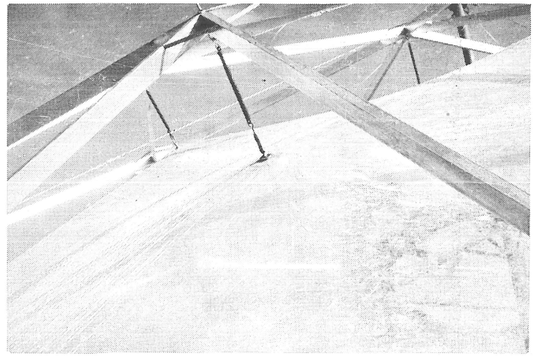


Figure 2

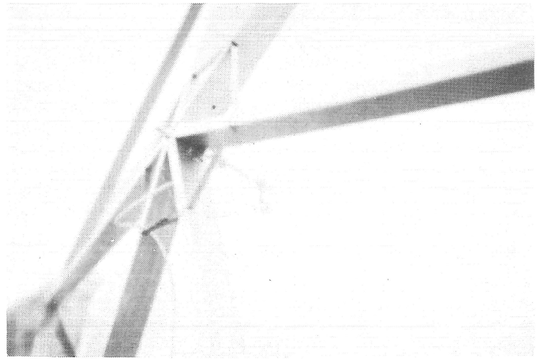


Figure 3

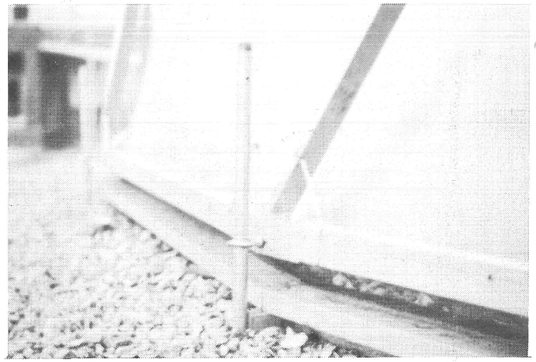
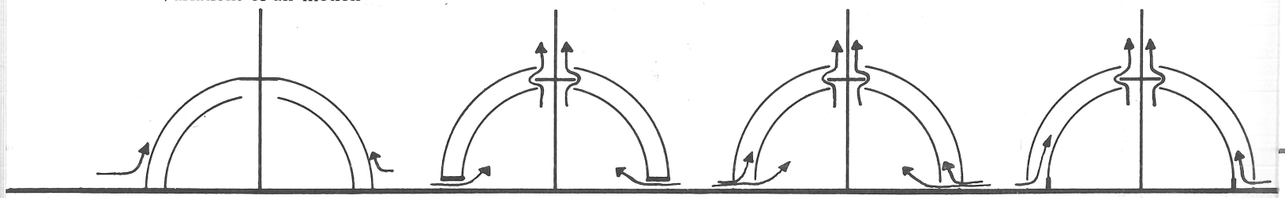


Figure 4

** Variations of air motion



1. No motion.

2. Air directly to interior.

3. Into interior and between skins.

4. Between skins, exhaust through cap.

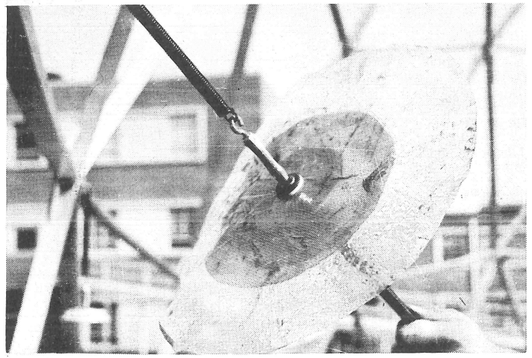


Figure 5

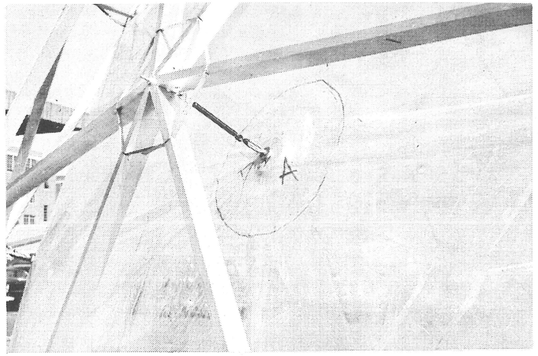


Figure 6

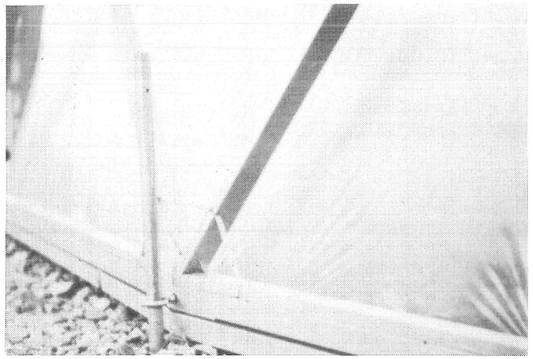


Figure 7

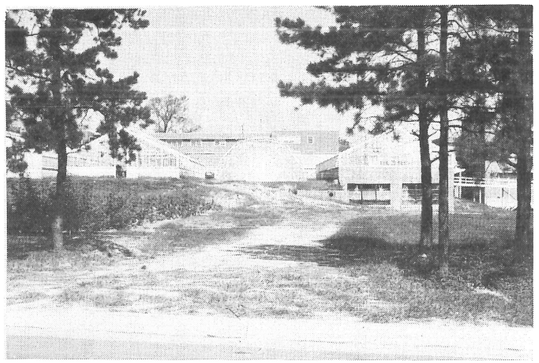
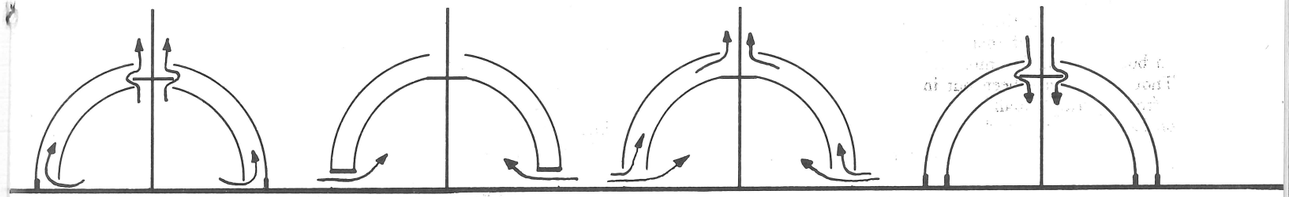


Figure 8



5. Exhaust only.

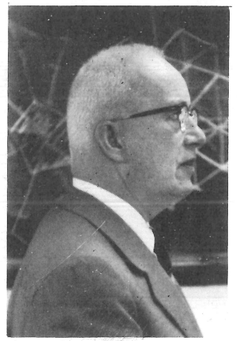
6. Air directly to interior, no exhaust.

7. Air directly to interior, between skins, no exhaust.

8. Air into dome at top only.

NO MORE SECOND HAND GOD

from the personal writings of buckminster fuller



Late tonight
(April 9, 1940)
I am just sitting here
for one of the many reasons that
people find themselves passionately isolated.
(The cause is rarely noble.)
In the midst of my overly
self-emphatic thought
I say, suddenly,
(as most of us do):
imagine, realize, the preposterousness of your chagrin
in the face of what is involved
in the newspaper headline
on the chair over there.
OSLO KEY BASES TAKEN BIG SEA AIR BATTLES ON
World Telegram 7th Sports

It's no longer a phoney war
but I don't think about that
nor do I think much about Oslo.
I think of such of the aviators and sailormen as
are in command of their faculties
on both sides at this moment.
Though you have been out in
a froth spitting squall
on Long Island Sound or
in an ocean liner on a burgeoning sea
you have but a childlike hint of
what a nineteen-year-old's reaction is
let alone a forty-five-year-old's
to the pitch black shrieking dark out there
in the very cold northern elements
of unloosening spring
off Norway's coast
tonight
15,000 feet up, or
fifty under or
worse,
on the smashing face of it and
here I see God.

I see God in
the instruments and the mechanisms that
work
reliably,
more reliably than the limited sensory departments of
the human mechanism.

And he who is befuddled by self or
by habit,
by what others say,
by fear, by sheer chaos of unbelief in
God
And God's fundamental orderliness
ticking along on those dials
will perish.
And he who unerringly
interprets those dials
will come through.

And—thoughtwise exploring further
the possibilities of unerring interpretation
I think of the strangest of paradoxes
vouchsafed to, and by, man.

For most simply through paradox
do I usually discover truth.

A sufficient light within
a seemingly opaque black object
may suddenly convert that object
into a brilliant vari-colored lantern.

As a philosophic corollary:—
multifaceted truth
is discovered
within the lantern of paradox
whose contrasting colors are but
angularly separated
lines of the spectrum
of the unit phenomenon,—
light,—
only at differing
wave lengths and frequencies.

Anew and translucently
truth is thus lensed
in all the colloidals
to human necessity,
such as drama and music,
religion, fun, anger, war,
prejudice, praise,
as individually assumed
personal virtues and
relative proximity
to God—

Ecce!
all peoples divided against one another are
in their digressions
equally inverted
and self-deceived
in their respective
tampered-with standards.

The degree of self deception
is proportional
to the width of the angle
of disagreement,
and the greater that angle of stress
the greater the anger.

The greater the anger,
the greater the susceptibility
to further propaganda—
a cancerous hate growth.

And all propaganda is false
if merely by misemphasis.
It is false because
it approaches diametric unbalance,
which scientifically speaking
is chaotic.

Chaos is erosive, explosive, shattering,
and therefore the antithesis
of the only potential survival means
of homo sapiens:—
through the harmonic integration of knowledge
whose kinetic is **uni-versal.**

Observe some paradoxes.
On the one hand the Germans and Russians
preaching rule of the masses—
National Socialism, atheism, paganism—
are in fact the sole demonstrators
of the importance of **individualism.**
For they employ individualism's
most cogent premise
that the ship must have but one captain.

And as individuals they believe precisely
in the survival superiority of mechanized man.
But the organized church
uncomprehending
the mechanical extension of man
says that such belief is **pagan**
and the totalitarians accept the designations as true
and therefore proceed
with **wanton conviction**
to behave in the appropriate manner
of a social outcast.

Thus "licensed" they invent
vast and ofttimes ludicrous
prevarications
as ballistic instruments.
They lie with as eager enthusiasm
as that applied to gun-powder and plane making.

And on the other hand the English and French
though preaching Democracy, Individualism and Christianity
are the greatest progenitors of collectivism and paganism
for theirs is a corporate amorphous individualism
a **legal entity individualism**
of limited personal liabilities,
a shadowy industrial monopoly,
a second hand dictatorhood,
sculless.

And its sóvereign perfidies,
perpetrated usually through the negative tactics
of ommission or misemphasis,
may reasonably be charged off to "impracticality"—to
"unwieldiness,"
to "vagaries of custom,"
to "sportsmanship," to public "convenience,"
or to "mystical traditions"
incumbent upon the corporate Messiahood
of sovereign nations.
And the machine is to them and their church
but an inanimate, garagey sort of money pump.

Albeit,
the preaching individual of either side
believes naively
in his own personal free will articulation
and benevolence.

I say naively, because the war itself
is the direct cumulative result
of non-freedom of the will of the individual
to articulate itself in the attainment of
its **obvious** potentialities
to better living on earth.
Children are not born slaves.
Slavehood is swiftly superimposed.
Now the inanimate slaves are here to take over
but the animate slave complex is still virulent particularly
in the subconscious of managers.
And in the traditions they manage.
Wherefore total abolition apparently involves
first burning down the old house,
set on fire as an unbelievable clown-act
which much to the amazement of the circus proprietors
no one attempts to put.

In the great quasi "democracies,"
so far as the **general scheming of things is concerned**
the individual no longer exists.
Mass production anticipates
the individual's selective functioning.

Chain hotels mass-produce
mass-collected service suggestions
tendered on printed cards
by a mass-publicized unseen "cordial host,"
who ofttimes a thousand miles away,
sometimes long dead,
sometimes quite non-existent
is "personally interested in you and your comfort,"
at 200 of your cents on "his" dollar.

Here also as **citizen**
man is expressed only as a party machine
in the "body" politic,
and his government expresses a mean low average statistic
"man." Any social action, if at all,
is weeks, months, and years laggard
to the thinking frontier of the individual.
His hour, minute, and split second thinking
and vital selection
are most nearly interpreted
but nevertheless inadequately,
by the corporate cranium—"Journalism,"
industrialization's limited-liability vocalizer.

And as capitalist or as inventor,
or as worker in the democracies
he is no longer individual
for he is no longer effective as such.
And he may only be flavoringly effective
as one of the many merged riskers,
researchers, believers, or laborers.
No corporate expression expresses
what he exactly means,
and therein precisely
lies the fate of Democracy.

Many people believe Democracy obsolete.
They are wrong.
Obsolete is the one thing
Democracy can never be,
obstinate, obstreperous, observant, obscure, but—

I will explain. That is, I will
if it's Democracy you really wish to save,
and not some trick you have been getting away with
behind its kindly broad young back.

(If you don't really believe in the world that is,
but only in one to come, or one gone by,
your best chance of finding such another
is by walking out a very high window.)

If you do believe in the world that is,
and wish to continue its development
and are willing truly
to pay your way
take a chance on Democracy.
You will find its highway plunk beneath your feet.
Today's sign posts along it are modern.
They say for instance:—

If you wish to prove Democracy

a preferential method of living
don't resort to Dictatorship to prove it.
Thus have all the rest of the major nations
allowed themselves to be bum's-rushed into doing
by panicked international finances.

Out of the method chosen in the time of emergency
emerges the new survival way of peace time government.

Democracy has potential within it
the satisfaction of every individual's need.

But Democracy must be structurally modernized
must be mechanically implemented
to give it a one-individual-to-another
speed and spontaniety of reaction
commensurate with the speed and scope
of broadcast news
now worldwide in seconds.

Through mechanical developments
of the industrial age
the cumulative production of human events
within the span of a four year administration
is now the quantitative equivalent
of the events of a four hundred year
pre-industrial dynasty.

But it is the producer salesman
who has been super instrumented
and merged into a tinker colossus,
a Pan-continental
blacksmith, baker, and light maker.

Democracy must, as consumer and worker,
as soldier and mother,
as scientist, or simple enjoyer,
be made adequate cathode
to the mighty merged annode.

Devise a mechancial means
for nationwide voting
daily and secretly
by each adult citizen
of Uncle Sam's family:
Then—I assure you
will Democracy "be saved,"
indeed exist,
for the first time in history.

This is a simple mechanical problem
involving but fractional effort
of that involved in distributing
the daily mails to the nation.

Telephone talks in the U.S. each day
are three times the **number**
of votes which were cast
for President
in the record election year.

Electrified Voting as bride
to our most prodigal
wild cat broadcasting
and beloved son—Journalism,
promises a household efficiency
superior to any government of record
because it incorporates
not only the **speed of decision**
which is the greatest strength of the Dictator,
(a boon if he's godly,
a death-ray if he is not)
but additional advantages which can never be his.

Additional advantages of Electrified Voting
first coming to mind:——

1. *Provides an instantaneous contour map of the*
   workable frontier of the people's wisdom,
   for purposes of legislation.
   administration, future exploration, and debate,
   so that neither over nor under
   estimate may occur,
   of their will and ability.

2. *Certifies spontaneous popular cooperation*
   in the carrying out of each decision.

3. *Allows for continuous correction of the course,*
   or even complete retraction,
   should (and as) experience indicate desirability,
   without political scapegoating.

4. *No foreign power in the world*
   can stand up against
   the unified might thus invoked
   through the thrilling mystical awareness
   of multimillions of individuals
   that they personally
   have taken responsibility for the course,
   and that their own inward secret moral decision
   coincides with the majority
   in the application of their mutual strength,
   (Vast now in U.S.A.
   by the will of God
   beyond any in history)
   in the righteous salvation
   of the peoples of the earth.

5. *The credit and imagination*
of all outside peoples of the world
will be stimulated that nothing will stop them
short of attaining a line to that voice.
But so to do
they must join up with Democracy.

6. *The possibility mathematically*
of effective abuse through cheating
is nil.
I venture to say that the self-policing
by the honor system
spontaneously invoked
would make the fate of horse thieves
or snatchers of absent-newsvendors' pennies
frivolous by comparison.
No bloc, or pressure group
that is not a constitutional enemy
could consider running the risk of "stuffing."
The direct votes of any subversive enemy to Democracy in
the US would be inconsequential in number—
would eventually disappear in such a system.

7. *It cuts right across*
all red-tape of legal precedent
and any question of constitutionality, and
may be started extra-mural to the constitution
while getting out the bugs,
for instance by Charlie McCarthy, and Clifton Fadiman,
script by "Time Questions," sponsored by Coca-Cola.
Someday to be constitutionally adopted when tuned up.

8. *The economic credit base is self contained.*

9. *As direct evolution it cancels*
the possibility of revolution.

Accomplishment of this VOICE
must be a deed of organized responsibility
of the U.S. Press in its broadest sense.

If having tried it,
a modernized, electrified, direct Democracy
proves inferior as a survival means
against all-comers,
then may the people turn with contentment
to the superior means.
But if direct Democracy is not tired now,
future generations will again champion it,
and there will be world civil wars
until it receives adequate trial.

I believe America has **now**
won the right to be
first to try Democracy
that it is both sufficiently experienced
and intellectually developed
to provide a safety factor margin
which can insure success after
all deductions:—
for bitter hardship
of mental and physical stress;
for surprise, and panic;
and most importantly for **gross error.**
But whatever America's
choice—I got with it
with heart and soul for
its sagacity and time sense
I believe infallible.

Yes, I can see how that would be
a superior means of government,
but there is still something
essential and bigger
which we first must consider;
without which one, or infinity,
of life cell organizations
is but frightful matter:—
and that is rebirth of
OUR FAITH,—

In a direction;—
In comprehendible meaning
no matter how meagre
that checks with our daily thought
with our most random soliloquy;
that implicitly tingles in our fingers and toes,
and gladdens the vision;—
that even is singing in **me**
as I catch at a new popular song.
Faith, far, far more precise in meaning
than the academicians'
"non-anthropomorphic" designation of God,
and with none of the popular vagueness
of Einstein's epochal
"cosmic religious sense,"
yet embodying all that is important of those concepts,
not **down** or **up** written,
but translated to a living
workable spontaneity that
requires no answer from
others or books.
An all sense exciting,
all reason inspiriting
Faith in omnipotent justice
omniscient love
always attending
with infinite wisdom.

There is of course the **Church**—
today a Big-Three monopoly of credos—
a coalesced "Roman, Protestant and Jewish," big business,
its back to the wall.

Irrespective of its past values to faith
the **Church** is now but a convenient compromise
to divert the pressure of fear's escape
through the perpetuated waterwheel
of the re-manufacture of all useless contrivances
of which the individual would personally divest himself
but for nostalgic ramifications.

The Church,
once the largest and busiest of community structures
now exists only as a memorial
to the necessity of a special building for god,
so that a compromise "He" need not interrupt business
in the latter's over-towering houses
on the six days of the week
that are not "His,"
yet be on hand
to broadcast "the right stuff" on the seventh,
while the boys go off golfing.

The Church is also
security-capital's non-taxable hostage
against mobile Democracy's
eventful discard of "real" property—
the perpetual debt base,
that persistent static
in the otherwise high fidelity reception
of industrial democracy economics.

In the totalitarian states conversely
all Messianic credit is, care nome!
allocated to the supreme living individual
symbolically centralized in one—
"Our Father who are in Berlin,
Moscow, Madrid, and Rome,"—
simultaneously—
the end all of anthropomorphic religion.

And he is never a pretty god
and he is funny
when he goes by special train
to meet himself coming the other way
through a mountain pass
and shakes hands with his absurd reflection.

But all of importance here to me tonight
are two reactions—
one negative, the other positive.

First, that both sides
have allegiance to fallacy—
and the individuals of each side
are forced to esoterica
and to personal exemptions from all law,
scientific or moral
though the laws are clearly mirrored
to each individual as essential
for all others but self—
(well maybe not for the sweetie).

and positively:—

That tonight vividly (as tacitly always)
God is articulating
through his universally reliable laws.
Laws pigeonholed by all of us
under topics starkly "scientific"—
behavior laws graphically maintained in the performance
of impersonal instruments and mechanics
pulsing in super sensorial frequencies
which may serve yellow, black
red, white, or pink
with equal fidelity.
and I see man alone
as **mechanically** fallible
and progressively less reliable
in **personal** articulation
of God's ever swifter word,
which was indeed in the beginning.
Only as mind-over-matterist
as philosopher, scientist,
and **informed** technician
impersonally and universally preoccupied
is man infallible.

For the oral and written word
was but the haphazard infant
of the ever more precise
modern instrumental articulation
of communicable comprehension.

We know this to be true
because mechanisms can only perform successfully,
their ever more superhuman and untiring
precision of **communication** of truth
in proportional degree to their **engineered** adherence to,
and interpretation of,

universal laws,
which though sometimes couched in poetry
are always essentially **scientific.**

As minor testament
witness the two hundred inch telescope
as it proceeds to reveal a known universe
at least eight times as great as yesterday's
and the electronic miscroscope
which now begins the revelation
of fundamental minutiae
50,000 times finer than the best light (or eyesight) microscope,
and the actual achievement of atomic energy,
released and controllable.

These wondrous actualities were always **there,**
inherent in the universe
of a god of meaning,
but only now
through the impersonal "word"
of these scientific instruments
does God **speak** of them
to our widening comprehension.
I knew in a sense
that they were there.
So did you.
But neither of us knew
that the other knew
until we could "say" to each other
"There they are precisely identified."
Only infinite adherence to stark laws of science
made this possible.

And God says
observe the paradox
of man's **creative** potentials
and his **destructive** tactics.
He could have his new world
through sufficient **love**
for "all's fair"
in **love** as well as in **war**
which means you can
junk as much rubbish,
skip as many stupid agreements
by love,
spontaneous unselfishness radiant.

Think it over—I was amazed
and despite all inertia impelled to write;—
and many may have written it earlier
and better without my knowledge.
In fact I'm sure they have,
but **I'm writing this**
and **that is important,**
that is God at first hand.

Never before has neutral
looked on with such unprejudiced willingness
to evaluate, adjust, and comprehend.
Never before has neutral so powerful looked on.
Never before has neutral
by virtue of a myriad of instruments
been so keenly aware
of every little hamlet upon the face of the globe,
so intimately near to them—
yet at the same time so duck's-backed
to broadcast falsehood or half truth.
These are innocuous
in the magnificent mechanical extension . . . .

People of the United States,
(I believe the vast majority of them)
who are at present especially staked out
to be fooled **in a big way,**
which is vitally and mortally,
by all the warring or plotting factions
foreign and domestic,
are precisely those who alone remain unmoved.

It is these silent propagandees
who unerringly appraise
the pro or anti-social values
of each world event;
of each communique;
and even of each personal happening
at other times trivial;
as these too many shade the outcome values
of man's transition
from dominant self deceit
to preponderant self mastery;
from stomach rule to dictate of reason;
from politicians tricking
to scientific guidance;
from a **fear** to a **happy comprehension motivation.**

And because he is innately
aware of these things,
does man evade past snares—
steel himself against artful pathos;
welcome the speedy destruction
of those former barriers to world happiness
which have been humanly insuperable
without fracture
by **any** individual member of the old order,

from annihilist to deacon,
from clerk to Prime Minister,
no matter how distinguished
by courage and integrity.

But now **common man** has
implicit faith in common man;
can safely negotiate a roadway
with any unknown other man—
even passing each other
at one hundred and forty miles an hour
in opposite directions;—
has only been prevented
from intercommunicating that faith directly,
but now is willing to wager all
on mutual effective comprehension
at the crucial moment;—
will not be shamed out of his faith
by attempts to falsely identify him;—
has weighed his distress
over concentrate frightfulness
of an exquisite moment
against unending elusive
and unmitigated greater suffering.

The revolution has come—
set on fire from the top.
Let it burn swiftly.
Neither the branches, trunk, nor roots will be **endangered.**
Only last year's leaves and
the parasite bearded moss and orchids
will not be there
when the next spring brings fresh growth
and free standing flowers.

Man now vastly instrumented
and attendant upon universal laws in his "blind" flying
through life will give ever less heed
to the seat of the pants opinions
of personal equation aces
for he knows it was those detonations
which formerly misguided him
into his betrayal by selfish scheming.

Here is true world democracy in the swift making;
a democracy which socializes all plenty
as that plenty is wrested from scarcity
by world widening cooperative industry;
a democracy which, scientifically
seeking categorical validity for all the motivations,
taxes only inertia
and awards copiously its individuals
who radiantly expand the commonwealth;
awarding them out of the newly integrated **wealth**
captured from the unseen fresh fruits
of the limitless environment—
and not by the slightest impoverishment
of commonwealth,
either by mortgage
or individual indebtedness.

Here is God's purpose—
for God, to me it seems
is a verb—
not a noun,
proper or improper,
is the articulation—
not the art, objective or subjective;
is loving,
not the abstraction "Love" commanded or entreated;
is knowledge dynamic,
not legislative code,
not proclamation law,
not academic dogma, nor ecclesiastic canon.
Yes, God is a verb,
the most active,
connoting the vast harmonic
reordering of the universe
from unleashed chaos of energy.
And there is born unheralded
a great natural peace,
not out of exclusive
pseudo-static security
but out of including, refining, dynamic balancing.
Naught is lost.
Only the false and non-existent are dispelled.

And I've thought through to tomorrow
which is also today.
The telephone rings
and you say to me
Hello Buckling this is Christopher:—or
Daddy it's Allegra; or
Mr. Fuller this is the Telephone Company Business Office;—

And I say you are inaccurate.
Because I knew you were going to call
and furthemore I recognize
that it is God who is "speaking."

And you say
aren't you being fantastic?
And knowing you I say no.

At least a quarter of a billion people
sit quietly each day for hours in
darkened halls.
And they say they are "at the movies"
not looking at anyone or anything real.
They certainly don't see the screen.
I say they are looking at God.

Incalculable millions of people sit isolated and silent.
And say they are listening to
Josephine Baker swinging or
Raymond Gram Swing
of course not really, but really;—
And I say they are listening to God.

And the journalists tell me
that Hitler is blitzkrieging
over the earth.
And I say that is the greatest
understatement in history
for it is God
now doing the housecleaning
and making the necessary renovations
in a hell of a hurry because,
we personally failed to make them
in everyday ways in our own time
and there is now only half a world left,
and one-half of our time remaining
in which to
"let our hair all the way down"
and say "We have plenty, we have
the means, the ability, the knowledge.
Let us start the mechanism
to creative account;
not to vast and vaster destructive means.

Let us not subscribe to remedy by amputation,—
first of all of our heads."
Let us say to the East and West and the North and the South
to its now reality spokesmen
"Here is our helping hand
forget your fighting.
Let's put things to rights.
We'll take care of the inconsequential accounting
when mankind has been salvaged if you insist on accounting;—
for we won't!"

That is the active, realistic loving
of this one moment in all time.

No one in America will say that its leader
is overstepping his authorized bounds
if he takes sincere, forthright, and
adequately big steps
to accomplish world healing.

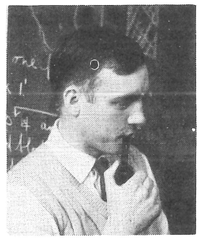
God will be handling the radio telegraph
for such a mandated dictatorship;—and
Democracy is not challenged by such a dictator
whose very first move must and will be
tidal-waved with Demos authority.

Stop "calling names"
names that are meaningless
you can't suppress God
by killing off people
which are, physically, only trans-ceiver mechanisms
through which God is broadcasting.

But his requirement is dynamic and
if man-mechanism proves too inefficient as an invention
he will immediately devise a cataclysmic improvement.

THE LANDSCAPE SURVEY

Lewis Clarke
Assistant Professor of Landscape Architecture
School of Design
North Carolina State College



"To view with a scrutinizing eye . . . to examine with reference to condition, situation, value, etc."
Webster's New Collegiate Dictionary

INTRODUCTION

Unlike the painter who in a creative design is influenced or limited by certain conditions or experiences within himself as a person, the architect is beset with additional physical conditions outside himself which have to be very closely combined in the final product. It is essential that an analysis of these external conditions be made in order to assess their value in directing or influencing the design.

Some of these influencing conditions in case of the architect might be: site considerations, functional and constructional requirements, economy, etc. In the case of the landscape architect, who is essentially concerned with the design of

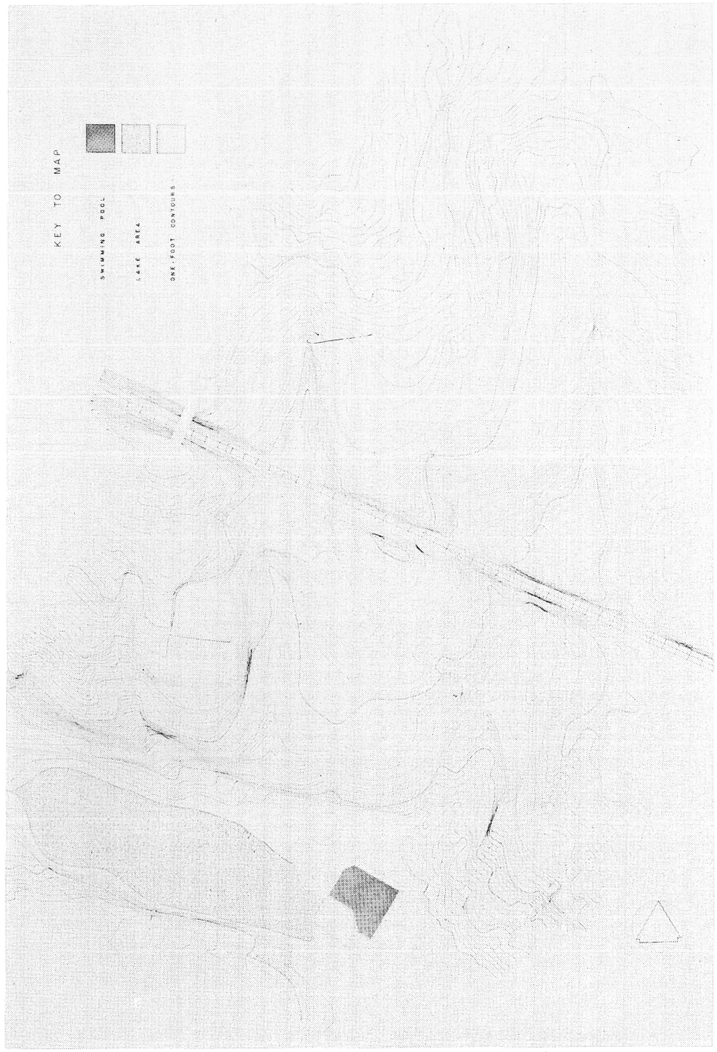


Figure 1 **CONTOURS**

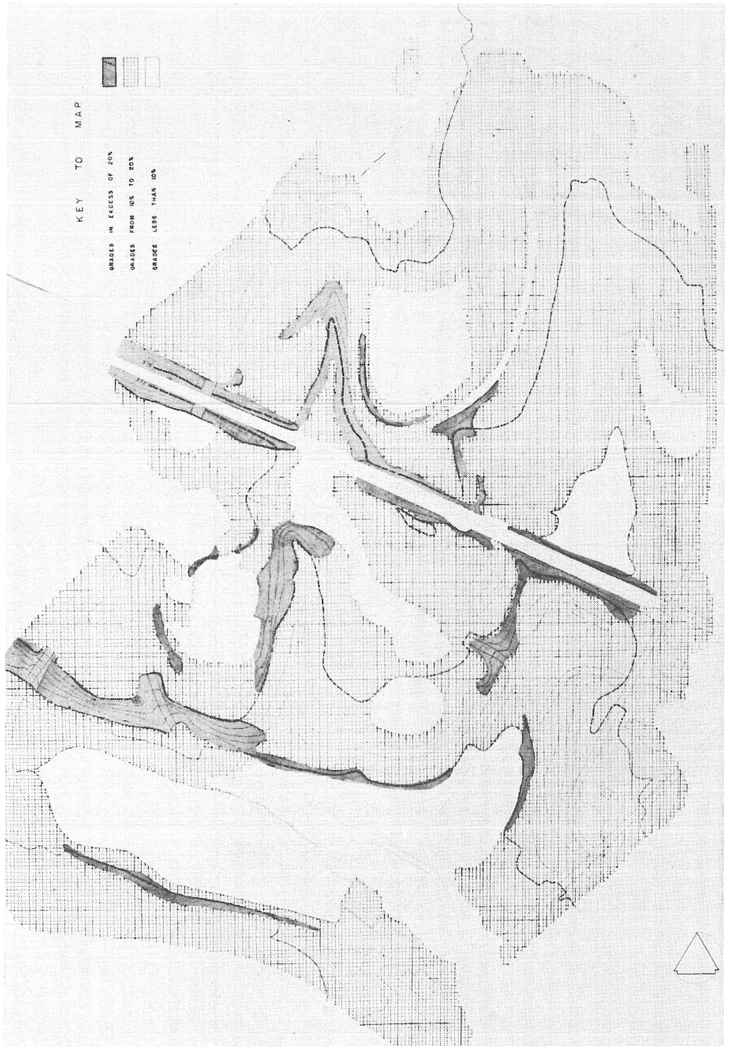


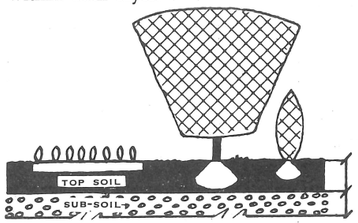
Figure 2 **SITE ASSESSMENT**

the surroundings in which the architectural structures are placed, there are also many diverse and specialized dominating design factors. Like the architect, he must not rely solely on an emotional feeling for his approach. The landscape architect dealing generally with large areas of land very quickly comes in contact with the ecological balance of the area. This inter-relationship between plant and animal life (including man) and their environment, the surrounding land, must be carefully investigated in order that any adjustment or retention of this balance may be considered during the development of the area.

By the use of a survey it is possible to investigate these conflicting conditions, separate them, and finally draw to a conclusion one or a number of dominating design factors.

THE SURVEY

The final result of a survey should be the assessment of the design or developmental pontential of a given site. It is only through such an understanding that the area may be developed for the maximum human use and enjoyment. With this object in view, the following method of conducting the survey was attempted. An arbitrary horizontal datum line was established above the sub-soil and below the top-soil, followed by an investigation within each layer.



After the research in each layer had been collected and inter-related it was assembled in the following order:

Below datum:
Sub-surface geological investigation on a broad scale together with drift geology and its potential (mechanical properties, water behavior, mineral content, etc.).

Above datum:
Surface influences:
- Contours and land form
- Water sheds and drainage
- Soils—types and properties
- Vegetation

Natural influences:
- Climatic and micro-climatic factors

Mass influences:
- Introduction of Biotic factor
- Existing land uses
- Communications and circulation
- Location of inhabitants
- Effect of site on surroundings
- Effect of surroundings on site

Existing influences:
- Visual aspect
- Site assessment

Conclusions:
It is usually a comparatively simple matter to carry out an investigation, but much skill and experience is necessary to synthesize and draw conclusions from the research. By using this survey system the conclusions follow naturally out of the assembled research material and preceed a design analysis.

Design Analysis:
Based solely on these conclusions a design analysis is prepared for the progression into the proposals for the final design of the area.

The contour map (figure 1) was the basis from which figure 2 was made showing how ground form, when diagrammed into three layers (very steep, flat, and land lying between these two classes), allows its undulations to become easily apparent, and together with figure 3 describes the action of surface water

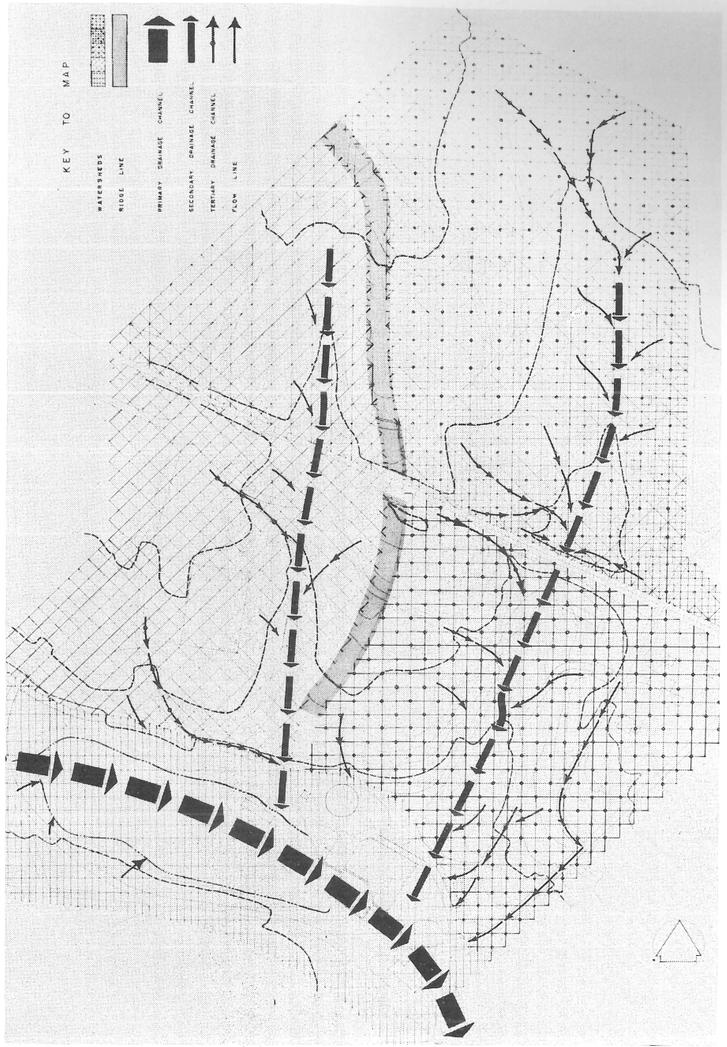
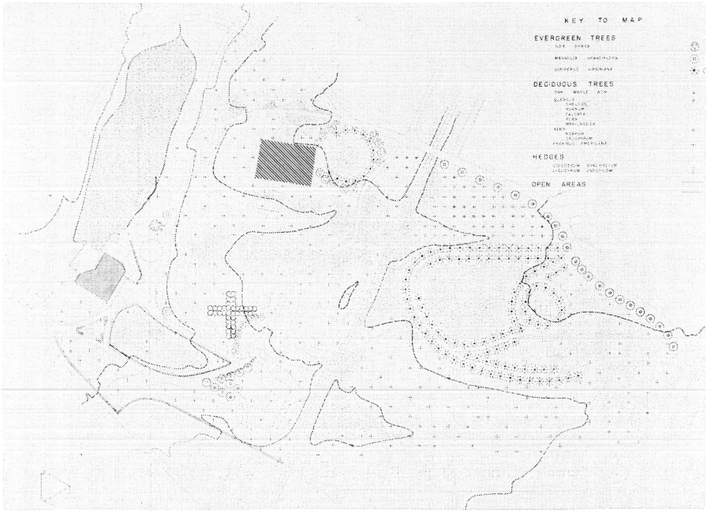


Figure 3 **WATERSHEDS**



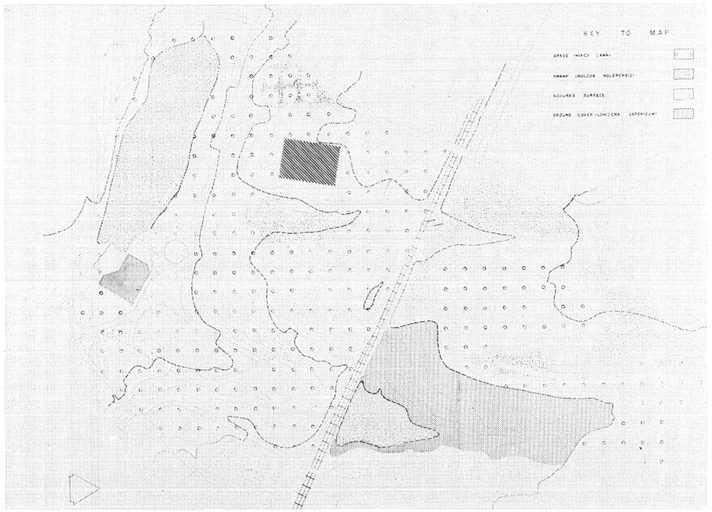


Figure 4, 5 **VEGETATION**

and drainage over this form. Vegetation was divided into two classifications:

1. Shrub and tree layer (figure 4)
2. Field and surface layer (figure 5)

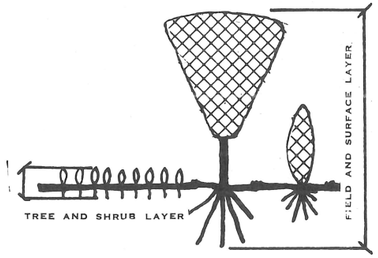


Figure 6 records the impressions of various areas of the site as experienced by a visitor to the site and includes such things as views that should be hidden, enhanced, preserved, etc.

INTER-RELATIONSHIPS

These few sheets selected from the survey material show a few typical inter-relationships, i.e. it was found that in one area the tree canopy alone remained needing attention and feeding for the soil condition in this particular area was extremely poor, which probably resulted from the influence of surrounding topography and erosion caused by the surface water running off of a recently sited car parking lot. Some of the pleasantest views over the site were from this area, which if developed appropriately could be utilized in the final scheme in a more integrated and beneficial manner. The main difficulty appeared to be in the non-mathematical nature of the survey; but in which the dominating or directing influences had to be found and placed in sequence of importance, recognizing that their inter-play and subsidiary effects were often more influential than at first appeared.

The area chosen for investigation is located on the edge of the North Carolina State College campus and acts as a buffer between the college and the adjacent city of Raleigh. This site of approximately six acres has limited use by various organizations, is bisected by a railroad—the upper extremity being used as a parking area and the lower partially as a recreational area. The survey problem was undertaken by the following students in landscape architecture: Robert Horn, Rufus Coulter, John Frazer, Keneth Coulter, and assisted by Benjamin Gary and Charles Burkhead.

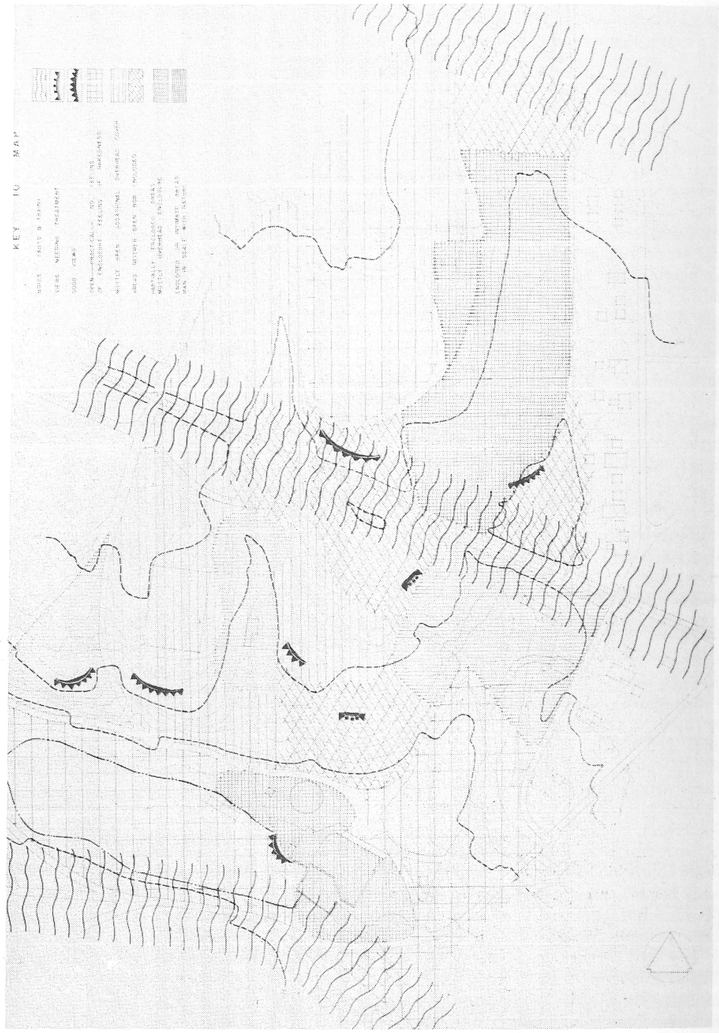


Figure 6 **SITE ASSESSMENT**

THREE STUDENTS AND "DESIGN PRINCIPLES"

Of the courses in the curriculum of the School of Textiles at North Carolina State College one is entitled "Design Principles" and is offered by the School of Design under the direction of Professors Manuel Bromberg and Duncan Stuart of the School of Design. When asked what the purpose of such a course was, Professor Bromberg answered:

"The course in Design Principles is an experimental study based on certain personal assumptions. Because of traditional word association the title, Design Principles, may be misleading. It is not a study of static concepts such as codes of beauty, or even design principles. It is not an analysis of past and present by-products of painting, sculpture, architecture, or any field separated out of a single whole pattern. The study is not an attempt to define art through mathematics, education through art, or sociology through biology, or to study the special technique processes of the arts. It is an attempt to establish a relationship of special endeavors through a process which is common to all men and all specialized fields."

The following selections are excerpts from the "final examination" papers of three textile students enrolled in this course.

Many thousands of years ago God placed man on earth along with countless numbers of other creatures. At first man was little more than a lowly animal himself, but today he enjoys a standard of living never before equaled on this planet. Why has man raised himself from his original counterpart to the position he has today? The reason is that when God created man, he endowed him with a wonderful brain; with intelligence and intellect—the ability to discriminate.

Before man ever realized that he was superior to other creatures he lived as they did. He had five senses; sight, sound, smell, taste, and touch. Perhaps the only things he knew were eating and sleeping. He was like a child, for he was helpless, so to speak, clumsy, and could do very little for himself.

Taking early man as a subject, we have a perfect design setup —intellect, potential, and goal. As man wandered over the earth, he encountered different changes in his environment such as heat, cold, rain, snow, etc. After hundreds of experiences man soon began, through his recollections, to catalog the difference between hot and cold, and a name for each slowly developed from his mumblings. Such is the basic pattern of the design process and the development of man. As man encountered various phenomena, such as grasping, locomotion, and speaking, he recorded them in his brain and through the years became adept at using them. As time passed, man used his brain to learn; his sensory abilities were co-ordinated and forms of ideational behavior appeared. Man became interested in improving himself and endeavored to create aids to help him in his undertakings—inventions. He developed definite design intentions and strove to help himself and others like him.

In the world of today, as thousands of years ago, every undertaking of man is a design being fulfilled. Every man is a creator and is gifted with the ability to design, providing there is a goal, method, and the drive to complete the design. Design intentions are those which give one the drive to see a design fulfilled into a reality. Working against the completion of every design are certain negative factors. Some of them are panic, which springs from fear in man's mind; ignorance, a lack of knowledge of the best possibilities of using the full advantages of the potential; inertia, which is a force containing morbidity and boredom; and self pre-occupation, which is no longer using the available potential. Any design that is reasonable can be realized, providing that positive forces are stronger than the negative.

Martin David Bier, Second Year Student, School of Textiles

To design is the process of fulfilling a felt or actual need. During the course of our lives we use the procedure known as anticipatory designing. This is the anticipating and fulfilling of a need by selecting the minimum factors involved in realizing our actual intention. A design is only definite in meaning to the individual who has achieved it. It can be termed as something you strive to get and succeed. Scientists, artists, composers, and other prominent men display their works and discoveries as their own design realizations.

When in the course of trying to achieve a design, one goes through stages known as predesigning. This is the careful and precise method by which we should go about fulfilling a need of some sort. Many designs are not achieved because of haphazard evolution. This method is a definite waste of man's abilities and his potential.

The first step in man's careful method of predesigning is to anticipate his goal. He must have a strong desire to succeed in his intention. Here courage is a rare gift. He has potential and positive abilities to work with like his sensory abilities, intellect, the ability to recall what has gone before him, the projection of his talents; and he is unique in the sense that there is no other person exactly like him. With a strong intention, the fulfillment of himself, he can increase the range of his many abilities highly to his advantage.

Next, man must collect all his potential in a set system of order of achieving the goal he has set. He must exploit and make decisions between the possible, probable, and improbable. He must be informed and ready to meet the probable variables preventing his finished design. He will probably have many unplanned interruptions; his plans may not be adaptable to certain arising situations; and miscalculated thoughts may prove very perplexing. But because of his strong desire to succeed and ability to reason, he can conquer these obstacles. This is the careful way of predesigning; the only way to succeed in realizing a design.

In haphazard evolution, man's potential is definitely wasted. His system of order is not clear, and he does not use his natural abilities to full advantage. His wasted motion and efforts cause premature burn-outs because of unwillful direction of his potential. No man can achieve his goal by haphazard evolution.

In the evaluation of a design, it is quite difficult to realize its value unless you have experienced something similar to it. Actually, if you have never experienced the value of a design, it has no meaning to you. . . .

. . . Throughout life all men are in the designing stage—we never stop. Today, more than ever, we are in a never ending search for solutions of the things around us, whether they be real or imaginary. Man constantly wants something better and strives to get it to fulfill his needs. The only difficulty or obstacle in the realization of a design is the intent and method of planning. The design process never ceases as long as man wants something better.

Howard H. Simon, Second Year Student, School of Textiles

The actual definition of design is hard to tack down because in theory it encompasses so large a field. When design is spoken of today, people most likely think of it as meaning something connected with art; such as a painting, a building, or some other visual realization. The philosophical meaning of the word and perhaps the true meaning of the word takes into consideration a much broader field than just designing in the sense mentioned above. Simply, design in this broader sense means a plan of action, a plan of living, a plan of believing. On setting up or designing any one of these plans, it will be seen that such a design is the result of an **intention.** This intention could be the result of a problem in one's mind which one wishes to answer—hence, one must develop a design to answer this problem. There may be an intention to live "right," according to such standards set up by society or set up by one's self. A design for such living will be created. There may be an intention to believe certain things. A design for such thoughts will be created. Therefore, in its broader sense, design is the result of an intention, the intention being the result of a desire or a need. A design can be looked at as the end product of this process.

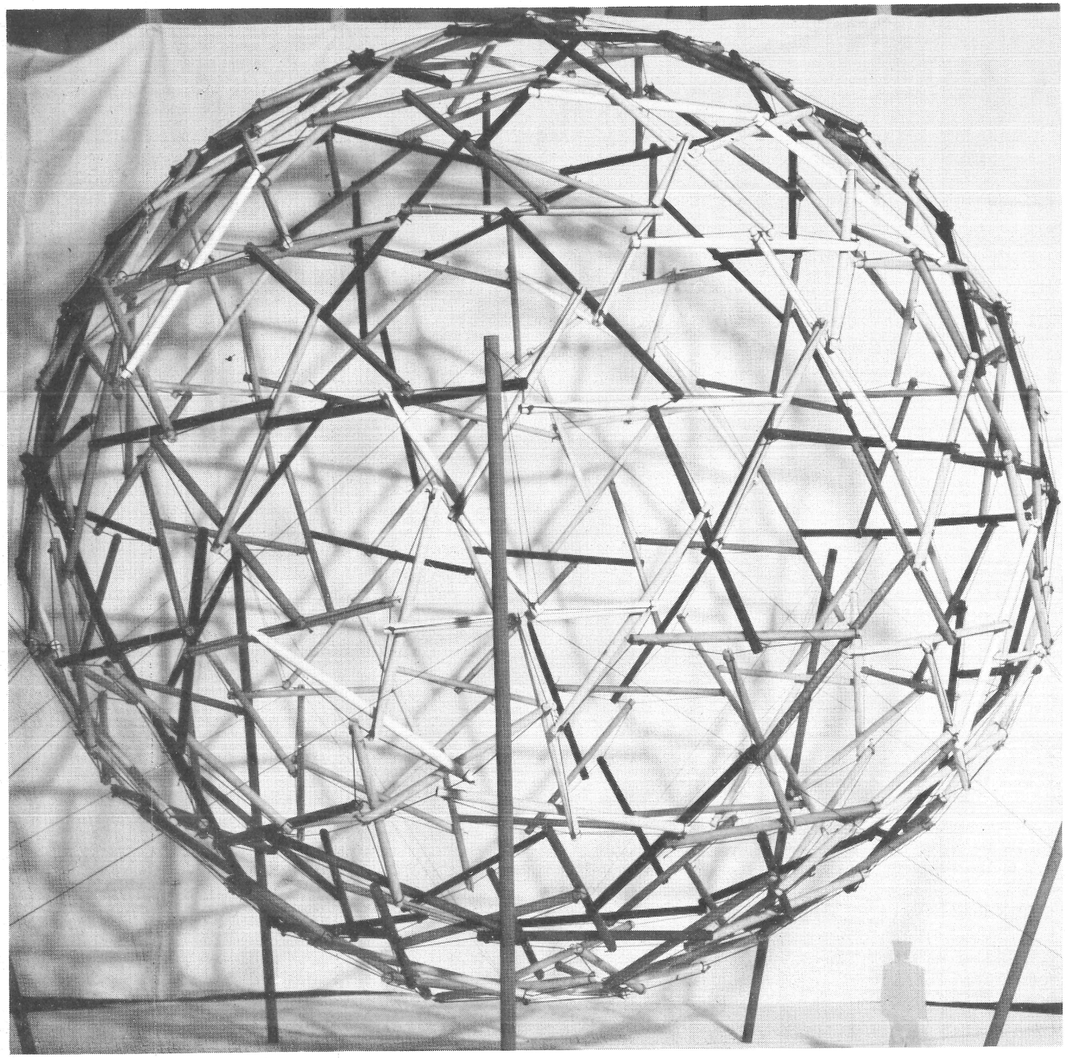
It was stated above that intention leads to design and that intention is the result of a **desire** or **need.** The first aspect to look at is intention as the result of desire. The desire is the desire to answer some problem that has been on one's mind or the desire to put one's self on a different level either by a mode of living or a mode of believing. The tools that are available to aid in fulfilling this desire are the standards set up by society, the answers to problems that men have already given us, and any new ideas which we ourselves may believe. Thus, man may use what is around him or he may enter a new field in creating a design.

Where the intention is the result of need, then the tools that a person will use will vary somewhat. Granted that the three tools for design mentioned are used, it is certain that a person will turn away from these tools where the need is so compelling that it is necessary to do so. The resulting design in this latter case may be the only answer to the need.

Another factor which is a tool of design is probably the most important of all in designing itself. This is inspiration. Inspiration is in the man himself—it is buried deep in the man and has no tangible connection with the tools mentioned above. It is something that is developed in man over time and it may be the result of his everyday experiences, his feelings, or his beliefs. When this is developed then it most likely will appear in the finished design.

The tools of design, therefore, would be what society has presented us with in the way of knowledge, beliefs, and codes; and also, what internal reaction has taken place inside the man. It is the ability to use these tools that will decide how successful a fulfillment of the intention will be.

K. H. Wilkinson, Third Year Student, School of Textiles



UNIVERSITY OF MINNESOTA PROJECT

VISITORS TO THE SCHOOL OF DESIGN FOR THE FALL AND WINTER TERMS:

WILLIAM DUDOK: *(October 11-15) Architect from Hilversum, Holland, conducting daily talks with students and one public lecture.*

WILLY LEY: *(November 7-10) Noted authority on rockets, missiles, and inter-planetary space travel, conducting seminars with students.*

ROBERT ROYSTON: *(November 9 to December 9) Landscape Architect from San Francisco (Eckbo, Royston, and Williams) conducting a problem with fourth year students of architecture.*

GEORGE BOAS: *(Alternate week-ends from January 1 to March 10) Philosopher from Johns Hopkins University conducting a course in Philosophy of Design with fifth year students.*

R. BUCKMINSTER FULLER: *(January 6 to February 7) Comprehensive designer from New York conducting a problem with group of architectural students and daily talks with students.*

PATRON SUBSCRIBERS

Miss Betty Lynn Barnwell	*Charlotte, N. C.*	*John Knight*	*Raleigh, N. C.*
Harold Boericke, Jr.	*Washington, D. C.*	*Edward Loewenstein*	*Greensboro, N. C.*
Leslie N. Boney	*Wilmington, N. C.*	*Anthony Lord*	*Asheville, N. C.*
Manuel Bromberg	*Raleigh, N. C.*	*Lyles, Bissett, Carlisle & Wolff*	*Columbia, S. C.*
Charles W. Connelly	*Charlotte, N. C.*	*Mrs. Stanislava Nowicki*	*Philadelphia, Pa.*
John James Croft, Jr.	*Asheboro, N. C.*	*A. G. Odell, Jr.*	*Charlotte, N. C.*
William Henley Deitrick	*Raleigh, N. C.*	*Louis A. Oliver and Herbert L. Smith III*	*Norfolk, Va.*
Mr. and Mrs. James J. Egan	*Attica, N. Y.*	*John J. Rowland*	*Kinston, N. C.*
Lawrence Enerson	*Lincoln, Neb.*	*Mr. and Mrs. Tetsuo Shimamoto*	*Cincinnati, O.*
James W. Fitzgibbon	*Raleigh, N. C.*	*F. Vernon H. Smith, Sr.*	*Charlotte, N. C.*
R. Buckminster Fuller	*Forest Hills, L. I.*	*Ralph Walker*	*New York, N. Y.*
Roy Gussow	*Raleigh, N. C.*	*Edward W. Waugh*	*Raleigh, N. C.*
W. N. Hicks	*Raleigh, N. C.*	*F. Carter Williams*	*Raleigh, N. C.*
John Summerfield Jenkins	*Norfolk, Va.*	*Williams, Coile and Blanchard*	*Newport News, Va.*
Dean Henry L. Kamphoefner	*Raleigh, N. C.*		