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DEVELOPMENT OF CERAMIC FORM
AND MATERIALS

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B.A., The College of Idaho, 1965

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the degree of

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The ceramist deals with pure undiluted elements of nature, earth, water, fire, and air, the four elements recognized by the ancient Greeks. Any explanation of a potter's work must begin with his process for we each develop techniques, problems and solutions inseparable from material considerations. Therefore, I would like to discuss each of the four elements mentioned.

Earth is the most evident and perhaps the most important element. From earth comes clay from which the forms are created. It is also the earth that forms the components of glazes.

Water becomes a part of the ceramic art early in the process when it is used to change the dry clay into a plastic mass. Water is also used as a vehicle for the application of glazes. Later in the firing process the dry powdered coating of glaze liquefies to flow down walls and slopes, gather in pools or to form drops and rivulets. All of this activity can be arrested by a drop of the temperature in the kiln. Thus, intimations of water persist in the final ceramic form.

Fire is the most dramatic element in the ceramic arts. Anyone who has seen a kiln in heavy reduction, with peep-holes whining white hot and spewing fire, cannot dispute

the drama of that scene. As fire passes through the kiln it carries smoke, currents and drafts all of which have distinct effects on the forms in their paths.

How does air, the last of the four elements, fit into a discussion of ceramics? Well, air existing inside the kiln reacts with the fire to which it is essential. Air is also necessary in the drying process. Just as water is an inherent part of glazes, so air is an inherent part of the ceramic pot for air exists inside and outside a container until it is filled with something else.

Negative and positive elements must of necessity be interdependent. The implications of this realization for a designer and builder of containers is profound. A pot can be perceived essentially as a clay skin around a particular space.

In dealing with ceramic materials I feel a certain affinity for directness of approach. Perhaps I was pre-conditioned to this by the fact that my education in art began at the hands of abstract-expressionists. It was in that milieu that I first encountered clay.

It has always been my belief that a work of art need not "look like" anything other than itself, and that a pot does not primarily exist to fulfil a domestic function. The non-functional forms which I have evolved, although

essentially containers which could conceivably be used for a variety of things, exist primarily for their own sake as do paintings and sculpture.

Early in my ceramic training I saw Peter Voulkos, prominently identified along with Rudy Autio as pioneer of non-functional ceramics, give a demonstration at the college I was attending. The freedom with which he almost attacked the clay was a revelation to me. I saw the very same inert materials with which I had been working come to life in his hands with a vitality and vigor born of Voulkos' very approach and attitude. His concluding pronouncement, as I recall, was something on the order of this, "Ladies and gentlemen, it is not the product, but the process which counts." I perceived in Voulkos' statement that the right process would yield the right product.

To define what I mean by "right" process and product is almost impossible to do with any significant degree of exactness. Such a definition must, I believe, be left in the end to the individual artist. If a process seems to be correct, that is to say, feels good, is somehow satisfying and if a lucid consciousness is brought to bear prismatically upon a diffuse, but sound subconscious, then probably the product will be right.

This brings me to another important factor in the

shaping of my present esthetic. I have found a deep and spiritual affinity with the Earth in her mystery, power and silence. The desert has been especially important, the austere buttes and canyons with their mass and simplicity have been a source from which to abstract ceramic form.

The formal considerations in attempting to develop a personal idiom of shapes, textures, lines and colors have led me to a severe, simple and massive imagery. Colors are muted, surfaces very often dry, showing a close tie to the desert and its austerity.

I believe that clay should by its appearance reveal all that has happened to it. "Flaws," such as cracks, are certainly undesirable in utilitarian wares, but cracks and crevices have become an integral part of my statement and unless they seriously damage the structure they are left unmended to add their particular character to the piece.

About eighteen months ago scale became extremely important and my work increased in size until it was limited only by available kiln space. That limitation has been overcome in a few pieces by forming them and firing them in sections to be joined later by epoxys. Another piece was constructed in one unit and sawed apart in order to fit the kiln. Although I have not done so, this process could be extended to monumental works fired in many sections

to be joined later.

Recently a change in my thinking has taken place and as a result I have begun to work in middle and small scale. I have found that as size decreases important differences in form have developed. I have witnessed my own vocabulary of shapes and textures enlarge rapidly. While these changes appeared to occur spontaneously and almost overnight, I can trace their development in drawings back to sketches for ceramics done over a year ago. It was not until I freed myself of the technical burden of great size that I was able to implement these changed ideas in clay. By working in smaller scale I find that I can invest more energy and concern on the actual form of the piece. This is a much more satisfactory way to work out changing concepts of form. Perhaps when my new forms seem secure I will again attempt larger work.

It is a wonderful and fascinating thing, to see one's own ideas take form and then evolve into something new. The fact that there are no permanent answers is probably one of the major reasons I enjoy working.

I have dealt with the material and images of my ceramic art. I have also discussed briefly some of the formal considerations of my work. I would like however, to stress again the importance of the elements of earth, water, fire and air

both in their necessity in my work and their influence upon it.

PART II

Working in large clay forms I have encountered certain technical problems. Pushing ceramic materials to make large forms often results in cracking and explosions, these occur most frequently during the drying and firing. Due to the frequency of these problems one is usually instructed that a clay wall be an inch thick or less. The large forms which I have evolved have required that some areas be as much as six inches thick.

My search for a satisfactory solution to these technical problems was challenging. I began my research working in the middle firing range of cone 5 to cone 6 (1180° to 1190°C). The first clay body with which I worked consisted of the following:

Body I

Local Clay (Nine Mile)	50 lbs.
Ball Clay	50 lbs.
A.P. Green Fire Clay	50 lbs.
Sand or Coarse Grog	25 lbs.
Chopped Straw	3.5 to 5.25 lbs.

I found this to be a satisfactory clay body fired at cone 5 or 6, but at cone 8 (1225°C) the clay body tended to sag and bloat.

However, since I was not satisfied with the glazes available for work in the middle firing range I decided

to push my research further making adjustments in the clay body in order to raise the firing temperature. I was able to formulate a cone 9 to cone 10 clay body (1250° to 1260°C).

The clay body used was as follows:

Body II

Local Clay (Nine Mile)	50 lbs.
Ball Clay	50 lbs.
A.P. Green Fire Clay	100 lbs.
Sand or Coarse Grog	25 lbs.
Chopped Straw	4.5 to 6 lbs.

All ingredients were left the same except the fire clay. I found that as the proportion of fire clay increased the plasticity of the body reduced. Thus, the latter clay body has little plasticity. Fortunately, the forms with which I work do not depend on a great deal of plasticity so I found the clay body to be a satisfactory medium.

The most striking feature of the clay bodies is the addition of straw. The structure of straw provides a great deal of strength for the clay in both wet and dry stages. It also seems to be of value in the firing process. The straw burns out in firing at a low temperature, leaving a porous mass from which gases can escape more easily than from a denser mass, thus cracking is substantially reduced.

I have attempted to develop another stoneware body with the capacity for thick walled work which does not contain straw or any other organic material. I do not

find this body entirely satisfactory because it tends to crack in the claze fire even after successful bisquing. I believe the addition of straw will assist although it will somewhat alter the working qualities of the clay. This body contains the following:

Body III

Ball Clay	50 lbs.
A.P. Green Fire Clay	100 lbs.
Grog	25 lbs.
Custer Feldspar	5 lbs.

To this body I have added 2 per cent shredded fiber glass, making it possible to work this body much thinner. The fiber glass maintains supportive strength for the heavy rims and lips of the forms, and cracking is virtually eliminated. However, serious problems occur when the skin comes in contact with the shredded fiber glass. As one works microscopic particles of fiber glass are embedded in the hands where they seem to cause no apparent irritation, but as the hands come in contact with other parts of the body they leave microscopic particles embedded in the skin. A week or so later a severe rash develops as the body seeks to reject the embedded fiber glass. This rash is extremely uncomfortable and treatment can become quite expensive. Perhaps one could work safely with protective clothing and gloves, although working in such conditions without guarantee of protection seems undesirable and therefore I have terminated

my work in shredded fiber glass.

Other additives may be effective as well, sawdust, perlite, and vermiculite are all possibilities. The problem with essentially granular materials, however, is that their addition renders the body even less plastic and thus harder to work with. Such bodies also lack the wet and dry strength characteristic of the straw therefore, necessitating the building of thicker parts for self support.

At the present I am also working in porcelain. The extreme density of porcelain makes thin walls imperative and thus limits the size. I plan to experiment with organic materials in this medium also by adding fiber from the cattail plant to the porcelain. It would not be feasible to use straw because of its coarse texture. The coarse straw would limit the plasticity of the already semi-plastic porcelain body to the point that virtually nothing could be built. The primary purpose of adding the cattail fiber (fuzz) to the body is in attempt to increase the size of my porcelain pieces.

The adding of organic materials to the clay bodies is intriguing research and there are a number of questions still unanswered, for instance, how much organic material can be used successfully in a clay body? My research in this area is not completed. On the contrary it is just beginning.

The formulations of clay bodies, especially in the solution of various technical problems inherent in particular forms, is one of the most fascinating aspects of ceramic art.

PART III