THE SYNTHESIS OF DECORATION WITH OTHER DESIGN ELEMENTS:

A PRESENTATION OF CERAMIC PIECES

DISSERTATION

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Introduction
The compulsions that motivate craftsmen to enrich the appearance of their creations with surface decoration are inherent in the constitutional behavior of human beings. Love of ornamentation has no racial or geographic boundaries. Creator and consumer have interacted to promote the continuous production, in one form or another, of decorated artifacts since prehistoric times. The practice of decorating, as a specialized occupation, has been accepted as a valid activity in many and widespread social orders. Decoration has such strong appeal that its value in enhancing an object may extend into value for itself, with the object even existing for the sake of the decoration.

The intrinsic values of decoration indicate two distinct ways in which decoration functions — dependently and independently. Opinion varies with time and among people as to which function should be emphasized, but the rule of decoration apparently always has this dual nature. In itself it must have the quality of organizing and crystallizing our experiences. Since decoration exists in an environment, this quality is intensified by the closeness of its kinship to the complex of form and meaning in which it figures.

The contemporary ideal of arriving at greater
unity in the arts has raised the problem of achieving aesthetic coordination of decoration with the broader design applications that supply personal and group satisfactions. This problem concerns ceramists, because their art has so many tentacles by which it can be enriched or impoverished, and because its materials are so inexpensive, so readily available, and so adjustable to human whim. It therefore seems appropriate to devote thoughtful attention to the study of surface enrichment and other factors instrumental in the integration of decoration with the larger configuration of ceramic art. The great mid-twentieth century revival of this art as a medium for professional and amateur participation serves to make the need for study more urgent.

This dissertation represents a search for personal improvement in ability to invent decorations and to synthesize them with other elements contributing to aesthetically expressive ceramic wares. In implementation, the project was conceived as maturing through the creation of concrete examples and culminating in an exhibition of selected pieces in which the complex relationships of decoration were realized in a worthy manner. For purposes of documentary reference, a visual record was to be made of the exhibition in the
form of a photographic statement, supplemented by such text as was pertinent to a broader understanding of concepts which initiated or grew out of the work.

Since the body of the dissertation was studio work, the problems pursued were both in the realm of ideas and physical application. Fundamentals common to the arts had to be incorporated. A constant effort to achieve formal aesthetic standards — such sensibly apprehended principles as volume, proportion, tension, and rhythm, with increasing ease, clarity, and precision — was implicit in the undertaking. Problems unique to ceramics and its decoration were pursued. Technical aspects of tools, clay, glazes, and kiln behavior were investigated, as were ornamental processes and subsidiary materials. Shape added interest by its diversities. The manipulation of the clay into controlled forms was not only necessary in order to investigate various appropriate decorations, but was also a creative challenge. Further problems accompanying the formal and physical ones involved in decoration were those personally held viewpoints which determine the direction of effort, viewpoints on purpose, meanings, and non-aesthetic associations.

Thus, in the realization of the major theme, those design factors from which ornamentation is cor-
related or emergent were examined for better synthesis of the whole. Solutions to some of the problems are embodied in the various pieces of ceramics. Many trials and detours were made; a substantial number of the results were discarded. The selected items are those that convey a sense of rightness, a feeling that the decoration contributes essentially to the worthiness of the total scheme.

The concrete reality is dispersed. This volume constitutes the record of the work exhibited. It is largely composed of photographic illustrations. Multiple views of the pieces have been included in many instances in an effort to more nearly approximate the reality of volume, tactility, scale, and motif. Color illustrations are specific, but also represent a sampling of the total range of colorations.

Supplementing the pictorial presentation are ideas and data figuring in the creation of the decorated ware. Information unique to each specific piece is included with individual plates. A more general commentary, consisting of thoughts which were both evolutionary and directive, hypothetical and conclusive in realizing the products, is inserted in segments. These segments and the photographs have been arranged to permit easy reference to those ceramic
examples which clearly visualize the specific written ideas. An appendix containing chemical data has been added for those who may be concerned with the more technical phases of ceramic art.

The undertaking was personally satisfying in the opportunity it provided for the development of sharper awareness of ceramic decoration and its relationships, tangible and intangible, and the opportunity it provided to employ these learnings with improving skill. Perhaps other ceramists will find in these efforts some things new and many things old, reorganized into fresh juxtapositions which may afford motivation for further exploration.
The Presentation of the Work
Ceramic Form and Decoration Are Interdependent

Ceramic decoration has little physical substance of its own. It is a qualitative treatment of surfaces, and surfaces depend on solids for their existence. In ceramic art, with the possible exception of tiles, the sustaining body has a positive nature that cannot be ignored. This ceramic conformation may become a crucial determinant in the mode and motif of decoration. By its insistence or neutrality a primary ceramic form suggests, asserts, confirms, or denies the treatment of its surface.

The shape of the object limits, but does not dictate the decorative treatment. The choices of ornamentation may vary from few to many, depending on individual preferences. Frequently, however, the physical presence of a piece points a defined direction. An emphatic motion, an insistent contour, or a rippling plane may exert a magnetism that gives strong directional pull in selecting the concluding enrichment.

The shape of the bowl in Plate I is largely restated in its decoration. The sunburst pattern is a variation of the radial movement begun by the plane indentations in the clay near the foot of the bowl. These are emphasized by being outlined in lighter color and
supplemented with fine radial lines arranged in freely angulated bands around the perimeter areas.

The footed bowl illustrated in Plate II has sharp throwing marks left by the fingers in the throwing process. These marks repeat the circular movement of the bowl and suggested the randomly cross-hatched spiral in the concavity. The finger-mark ridges prompted the use of a glaze which would give them distinction. The spiral was raised in relief to give a consistent pattern of color changes to outer and inner surfaces with the same glaze.

The uplifting walls of the bowl in Plate III, being best apprehended at or above eye level, are accented by textural treatment containing linear bird forms that echo the original movement. The contour of the vase in Plate IV reappears in the decorative additions. The line and volume quality of the object is repeated and modified in the incised figures, which are held in two-dimensional alignment by patches of fine horizontal scratching.

The wide-mouthed bottle in Plate V has a closed shape which inspired modification rather than reiteration in the decoration. The four panels of the body are repeated, but the lightness of the motifs and their
asymmetric placement alters the underlying solidity of the form.

The ceramic shape unquestionably exercises considerable influence on the decorative treatment. Conceptually, however, the shape can be developed from its beginning in anticipation of a conjunction with a projected idea for decoration. In this sense, shape and surface both have autonomy as well as interdependence and tend to develop concurrently. In realization, they may become equalized in effect, or one may assume a dominant position in relationship to the other.

Decoration is sometimes rudimentary, achieved by a color or texture that accentuates the form. On the other hand, the shape is sometimes reduced to a neutralized vehicle that interestingly modulates a pictorial plane. Though this latter relationship is currently in disfavor with many ceramists, their objections seem based on a limited rationale. Historical excesses in applying ornamental devices to any object, with little or no awareness of schematic totals, have encouraged such negative reaction.

The white bottle in Plate VI could support more complex ornamentation, but as a shape it has a self-completing simplicity. In contrast to other pieces
in the collection, the surface was made more visually positive merely by speckling the glaze.

Closely allied to the above piece in the approach to decoration is the bottle in Plate VII. The tear-drop shape has been beaten into hexagonal facets, some of which are delineated by line-texture inlay, and groups of which are aligned with almond shaped spirals. Here the decoration gives a subsidiary surface organization.

The bowl in Plate VIII was conceived to give simple concave form to a pictorial plane. While composed in consideration of the circular frame of reference, the two-dimensional representation takes precedence in interest over the vehicle to which it is applied.

In unifying shape and decoration, each requires adaptation in terms of the other; figuratively they need socializing. Relationship is automatically achieved by proximity, and the problem actually becomes one of intensifying the relatedness through common formal, and sometimes thematic, bonds. This relatedness can lie in a broad range. The proper equilibrium of conformity and deviation is ultimately intuitive, not readily measurable by any precisely calibrated instrument.

The figure of the anteater in Plate X derives
much unity in form and surface from natural sources, with external reference as the basis of both its modeling and painting. In it one immediately recognizes a translation of the coordinated design inherent in the natural phenomenon.

The shape and decorative motifs of the bowl in Plate XI could almost be equated in their abstract quality, simplicity, and understatement. Each is only moderately evocative. What binds these elements is the dominating iridescent brown-and-gold harmony.

In Plate XII, the decoration of the covered jar contains a representational theme, but one that is immersed in the all-over color and texture. The linear faces blend into the stronger effects of shape and glaze, and tend to lose their identities. On the other hand, the literary theme of the footed punchbowl in Plates XIII and XIV is sustained by its contrasting highlights and shadows. This architectonic piece was developed with a decorative frieze in mind. The fantasy theme previously had been prepared as a scroll design. With modifications it was applied as a band, and relief carving used to underscore the massiveness of the shape. Subsidiary carved details were then added to weld the shape and decoration more firmly together.
PLATE I

Bowl, SUNBURST

15½" diameter

Dark chartreuse background with diamond shaped radiants of a lighter value placed on each of the surface bulges of the clay wall; background enlivened by wandering concentric bands of perpendicular blackish brown lines.

Light toned radiants reserved with wax emulsion over the raw glaze; bowl sprayed with chromium nitrate; surface waxed; lines incised; wash of brown stain to fill lines; surface blotted.

Fired to cone 2 bisque, cone 04 glost; Body V; Stain #15; Glaze XLV.
PLATE I
PLATE II

Footed bowl
10" diameter

Curled blue merging into brown glaze over a tazza shape with a slightly raised relief pattern on its concave surface.

Spiral pattern painted with wax emulsion on the damp piece; light sponging removed clay adjoining the waxed areas to create low relief.

Fired to cone 06 bisque, cone 2 glost; Body V; Glaze Vb with overspray inside of Glaze IIIc.
Bowl, BIRDS

11 1/2" diameter

Warm grey with ivory colored linear birds and black speckles on the exterior; turquoise green with black speckles on the interior.

Sgraffito decoration cut through a thin brushing of slightly mixed black slip; bisqued; glazed with semi-opaque white through which globules of raw stain erupted to form speckles; interior sprayed with concentrated copper sulphate solution.

Fired to cone O6 bisque, cone O4 glost; Body I; Slip #3; Glaze VII.
Vase, CONVERSATIONS

18" high

Ivory matte color with edges of the motifs revealing an underlying warm brown.

Pattern carved in damp greenware; coating of brown engobe on greenware;

Fired to cone 04 bisque, cone 2 glost;
Body V; Slip #5; Glaze III.
PLATE V

Bottle and stopper

8" high

Mottled grey blue semi-matte glaze; four flattened sides are marked by asymmetrically placed beige hexagonal shapes and superimposed black star forms.

Beige areas reserved in wax emulsion over the raw glaze; piece sprayed with concentrated cobalt sulphate solution; whole piece covered with wax emulsion; lines incised; wash of black stain to fill lines.

Fired to cone 06 bisque, cone 8 glost; Body II; Stain #3; Glaze I.
PLATE VI

Bottle

20¼" high

Tall sculptural form with tan-flecked white matte glaze.

Fired to cone 06 bisque, cone 3 glost;
   Body V; Glaze IIId.
PLATE VII

Bottle

8" high

Dark burnt brown glaze with pitting and areas of light grey; fine lines of blackish blue.

Grey areas reserved in wax emulsion on greenware; brown stain brushed over bottle; whole surface waxed; lines incised; wash of blue slip to fill incisions.

Single firing at cone 8; Body II; Stain #7 and Slip #8; Salt glazed.
Bowl, TRAPEZISTS

13" diameter

Multicolor decoration in blues, pinks, yellows, greens on the natural red clay background.

Areas of color applied to greenware by brushing and stippling prepared underglaze stains mixed with white clay; each motif, as finished, protected by a coating of wax emulsion; final blue background applied by sponging; glazed transparent.

Fired to cone 06 bisque, cone 04 glost; Body I; Glaze XI.
PLATE IX

Bowl, POLITICAL CONVENTION

16½" diameter

Yellow speckles and figures and black line patterns on a white background.

Yellow areas painted on greenware; surface covered with wax emulsion; lines incised; wash of black slip to fill incisions; surface blotted; droplets of yellow stain spattered on the waxy surface; transparent glaze.

Fired to cone 2 bisque, cone 04 glost;
Body V; Stain #10 and Slip #4;
Glaze XIII.
Sculpture, ANTEATER

26" length

Realistically colored in ivory white, dense black, and mottled green black.

Greenware figure painted in black and white slip; covered with transparent, dense black, and mottled glazes over the engobes; upper surfaces sand blasted for texture.

Fired to cone 06 bisque, cone 04 glost; Body VI; Slips #3 and #1; Glazes IX, X and XI.
Bowl

9" diameter

Sooty gold glaze on which dark iridescent brown motifs have been brushed.

Decoration painted on the raw glaze with raw oxides and glost fired in a reducing atmosphere.

Fired to cone 06 bisque and glost; Body III; Stain #12; Glaze VIIIa.
Covered jar, FACES

7" high

Mottled blue and dark brown glaze faintly reveals an all-over decoration of faces and line elements incised into the body.

Decoration deeply grooved into damp body; greenware sprayed with brown slip; heavily glazed.

Fired to cone 04 bisque, cone 2 glost; Body V; Slip #5; Glaze Vb.
Footed bowl, ALICE IN WONDERLAND

11\(\frac{3}{4}\)" diameter

Satiny white glaze and grey blue shadows over the carved exterior surfaces; shadowy ivory color inside.

Relief carved on the damp greenware; bisque lightly sprayed with stain; dried stain wiped from surfaces with steel wood, leaving a dark patina; glazed with semi-opaque white, through which stain infiltrated; interior has a thin layer of raw umber sandwiched between two layers of the white glaze.

Fired to cone 2 bisque, cone 04 glost; Body V; Stain #13; Glaze VII.
The Content of Ceramic Decoration Has Many Extensions

Communication is a major aspect of artistic expression. The united powers of communication contained in the physical arrangement of the object give form and decoration their social importance. We make symbols to convey meanings, and we imbue those which we have made with symbolic content. A simple "X" has the power to assume many different meanings. The origin and the meaning attributed to the created device both come out of human experience. They may resemble each other or differ. Some symbols gradually lose their meaning, but remain in use with diminishing power. Some retain their evocative strength by acquiring new meanings. Others are modified or come into being through the need to express something newly felt or thought.

Art taps human experiences for its meanings. These experiences are transposed into plastic form to embody symbolic content. Any satisfying decorative scheme, whether abstracted beyond identification of its beginnings or retaining full details of pictorial realism, ranges far in its non-aesthetic connections with exoteric reality. These references are not art, but are needed for artistic sustenance.

The process of creation occurs essentially with-
in individuals, but its beginnings and ends extend beyond him. In the individual, as in history, the internal-external rhythm of creativity periodically shifts in the emphasis we place on either phase, but the essential movement remains.

In seeking within we inevitably find outward leads; whatever outside agent inspires us, it does so in terms of what we are. Inventive production of the most abstract patterns of color arrangements, brush strokes, or space divisions depends on crossbreeding of person and environment, however unidentifiable the elements in that relation may ultimately become.

Decoration, as a repetition of restatements, grows hackneyed. Its content needs constant enrichment through the reaction of the creator to his surroundings with the fullest use of his own senses. Vicarious experience cannot have any greater intensity than the intensity of the direct experiences by which it is translated. The deliberate search for inspiration in external sources through one's own senses is an old and valid pursuit in the plastic arts. The "decorative arts" need this kind of nourishment as they seem peculiarly susceptible to the faults of becoming too much like regurgitations of other art forms or of becoming inbred variations on variations.

The ceramic pieces concluding this chapter carry
examples of decorative schemes that were motivated by direct experiences. They differ considerably in the role which each particular experience plays as content in the finished piece. Each experience was important in a catalytic sense. The covered jar in Plate XVI, for example, makes but an oblique reference to the hands that made and held it. Similarly, one's particular experiences would determine whether one perceives in the decorations of the bowl in Plate XVII or the bottle in Plate XVIII only etched lines and accents of color, or, in addition, the Japanese glass wind chimes to which they refer. More directly expressed are the tiger cats on the vase in Plate XIX.

The pieces in Plates XX, XXI, XXII, and XXIII all have decorations that are variations on a similar musical theme. They range in effect from caricature to a human reference that persistently recedes into abstract organization of color and space.

Wheel-thrown pottery vessels, through generalized feelings almost instinctively attached to them, are abstract sculptures. Here, as well as in ornamentation, it would seem worthwhile for the creator to speculate at times on particular sources of aesthetic feeling to insure first-hand perceptions and to keep sensitivity sharpened. One may readily in-
vest these forms with particular meanings by making them correspond more closely to nature. In so doing, the choice of decoration may be clearly or imperceptibly influenced.

Animal, plant and mineral forms stamp themselves on the human senses in moments of seeming immobility and in motion, growth, and transformation. In the shapes of the bottles in Plates XXIV and XXV, allusions to human anatomy are apparent. In the former, the swollen and indented plane and the angularity of contour are particularized in the subject of the decoration. In the latter bottle, human characteristics of shape are enveloped in an all-over pattern.

In reference to the evolution of art from experiences, the changing scope of these experiences needs recognition. The extension of our senses by mechanical invention has so oriented our sight, hearing, and touch that new worlds of experience, no less real because they are perceived through intermediary channels, are constantly feeding the impression-expression rhythm. The casserole in Plate XXVI, is one example of arrested motion. It recaptures one of many experiences to be discovered in the metamorphosis of liquid drops. The decorative band on its shoulder had its inception in a diagram of a molecular chain. Whether it suggests this,
or a water pattern, or a topographical map is only relevant to the extent that, as a symbol, it is a vehicle that can carry such reaches of contemporary meanings.

In the large segment of the ceramic art field where usefulness is defined or implied, there are additional elements of meaning to contend with in design. Practical considerations -- functions of sanitation, durability, insulation, and containment -- are integral in our conception of pottery, and figure in our criteria of values. From immemorial times pottery has met the need for certain utensils of everyday or periodic use, and in doing so has given outlet to the urge for aesthetic expression. This utilitarian function imposes limitations that can both inhibit and inspire. Use determines shapes and may require such details as lips for pouring or knobs for handling. It affects decorative choices in the placement of motifs, in the application of textures and in the appropriate association of meanings.

While practical and aesthetic concerns may differ, they do overlap and figure in each other. The visual caress that one mass invokes may become intensified into an invitation to grip in another one. A tactile satisfaction is achieved that is simultaneously extraneous and relative to actual use (Casserole, Plate
XXVII). A waxy glaze is practical and is pleasing in itself. (Bowl, Plate XXVIII).

Though utility is non-aesthetic, it can act as an entry to or enrichment of artistic enjoyment in that it presents another kind of participation potential. Utilitarian meanings are common and easily grasped, making them frequently a preliminary, secure, and interest-holding preface to further apprehension. Utility behaves with a fair degree of predictability, at least in a homogeneous society, and is highly communicable. What it means may be quite particular, as in a vase for branches or long-stemmed flowers (Plates XXIX and XXX). It may have multiple meanings in a covered wide-mouth jar (Plate XXXI). Bowls have such general versatility that one often accepts them without designating a special use. Whether used for salads or liquids, for storage or mixing, we need them in a variety of diameters and depths. Regardless of what utility is attributed, however, there is an assumption of the contact and mode of handling of some physical substance other than the pottery article itself, an assumption which invades the conception and perception of the ceramic form and decoration. Utilitarian implications are so common that they are often a barrier in the appreciation of such sculptural pieces as the bottle-form which often alludes to
usefulness without being made for any particular present day uses (Plates XXXIII and XXXIV).
PLATE XV

Vase

10" high

Straight line spatial pattern of white lines on a streaked blue grey ground.

Sgraffito decoration through a black slip which was lightly brushed on to the damp piece.

Fired to cone 06 bisque, cone 04 glost;
Body I; Slip #3; Glaze VII.
PLATE XV
PLATE XVI

Covered jar

11½" high

Beige and red brown motifs on an iridescent grey to green ground, with random black flashes.

Beige areas reserved with wax emulsion on the raw glaze; exposed area brushed with concentrated copper sulphate solution; whole surface waxed; lines incised and filled with brown glaze.

Fired to cone 06 bisque, cone 8 glost; Body II; Glazes I and Ig.
Plate XVII

Bowl, Wind Chimes #1

12\(\frac{1}{4}\) diameter

Black lines and patches of rose, yellow, and turquoise on a stark white background.

Interior surface of the dry greenware bowl coated with wax emulsion; lines incised; wash of black slip to fill scribed crevices; underglaze colors mixed with glaze were painted on the bisque, and the whole piece covered with transparent glaze.

Fired to cone 2 bisque, cone 04 glost; Body V; Slip #4; Glaze XI.
Bottle, WIND CHIMES #2

15" high

Spots of grey green, blue green, yellow, and pink on a matte background of fluid black and white stripes.

Colors painted on the raw glaze with underglaze stains mixed with the basic glaze as a bonding agent; surface covered with wax emulsion; lines incised; surface washed with black stain to fill incisions; blotted to remove excess stain.

Fired to cone 04 bisque, cone 2 glost;
Body V; Stain #5; Glaze III.
PLATE XIX

Vase, CATS #2

4 1/4" high

Satiny white background with dark red brown decoration of cats and stippled enframement.

Free form area reserved on each bulbous segment of the greenware with wax emulsion; cat motifs incised through wax; slip inlaid into incisions and sponged on to unreserved background; transparent glaze.

Fired to cone 06bisque, cone 10 glost; Body IV; Slip #6; Glaze II.
PLATE XX

Jar, MUSICALE # 3

6" high

Black motifs on a tan-speckled matte glaze, white outside and grey blue inside.

Greenware piece covered with wax emulsion; lines incised and filled with black slip; slip infiltrated subsequent matte glaze; inside sprayed with nickel nitrate solution.

Fired to cone 06 bisque, cone 3 glost;
Body V; Slip #2; Glaze IIId.
PLATE XX
Covered jar, MUSICALE #2
9" high

Furry black linear pattern on a tan speckled grey blue matte glaze.

Bisque piece covered with speckled white matte glaze; surface coated with wax emulsion; decoration incised through wax; surface washed with black slip to fill lines; piece warmed to recover porosity; sprayed lightly with base glaze; sprayed with concentrated solution of nickel nitrate.

Fired to cone 06 bisque, cone 2 glost; Body V; Slip #2; Glaze IV.
Bottle and stopper, MUSICAL #1

8 1/2" high

Black motifs and raised texture on a white background.

Greenware piece surfaced with wax emulsion; pattern incised; heavy wash of black stain to fill incisions and collect in globules on the waxy surface; transparent glaze.

Fired to cone 06 bisque, cone 10 glost;
Body IV; Stain #3; Glaze II.
PLATE XXIII

Bottle and stopper, MUSICALE #4

10" high

Beige and pink pattern on a flecked dark brown stony matte glaze.

Beige areas reserved with wax emulsion on the raw glaze; exposed areas stained brown; surface entirely waxed; lines incised; incisions filled with a wash of white stain, which the chrome contained in the dark brown stain turned pink.

Fired to 06 bisque, cone 8 glost; Body II; Stain #8 and #9; Glaze I.
PLATE XXIV

Bottle and stopper, DANCERS

21 1/2" high

Brownish purple glaze with beige areas and linear black figures on the three convex segments.

Beige areas reserved on the raw glaze with wax emulsion; surface brushed with brownish purple stain; outside completely waxed; lines incised; wash of black stain to fill lines.

Fired to cone 06 bisque, cone 8 glost; Body II; Stain #8; Glaze I.
Bottle

16 ½" high

Spring-like whorls of beige and red brown matte glaze with outlines of black.

Beige areas reserved on the raw glaze with wax emulsion; red brown glaze painted over the exposed beige areas; surface fully waxed; lines incised; wash of black stain to fill incisions.

Fired to cone 06 bisque, cone 7 glost; Body II; Stain #3; Glazes I and Ig.
Casserole

8\(\frac{1}{2}\)" diameter

Stony light grey and speckled brown-grey matte glaze with black lines embedded.

Raw glazed piece lightly sprayed with cobalt sulphate solution; irregular bands of color reserved with wax emulsion; surface brushed with brown stain; surface waxed; lines incised; surface washed with black stain to fill lines.

Fired to cone 06 bisque, cone 8 glost; Body II, Stain #3; Glaze I.
Casserole

10¼" high

Dark speckled grey matte glaze with vertical stripes of lighter blue grey.

Lines reserved with wax emulsion on greenware; light spray of black slip; bisque piece covered with white matte glaze; raw glaze sprayed with concentrated solution of nickel nitrate.

Fired to cone 06 bisque, cone 3 glost; Body V; Slip #2; Glaze III.
Bowl

16" diameter

Black and white design on a lime green matte background.

Raw glazed bowl covered with wax emulsion; snowflake design incised and washed with black stain; fired to cone 3; white areas reserved with liquid rubber emulsion; bowl glazed with lower maturing matte glaze and sprayed with concentrated copper sulphate solution; rubber frisket peeled off.

Fired at cone 06 bisque, cone 3 and cone 04 glost. Body V; Stain #1; Glaze III and Glaze XII.
Vase
23" high

Tall cylindrical shape pressed into asymmetrical tube and surfaced with tones of charcoal grey to pale grey-blue matte glaze.

Moist piece sprayed lightly with black slip; wax emulsion applied in vertical stripes; sprayed again with black slip; lines incised and areas scraped; white matte glaze applied to bisque.

Fired to cone 06 bisque, cone 3 glost;
Body V; Slip #2; Glaze III.
PLATE XXX

Vase, CIRCUS
23" high

Black speckled semi-matte pale blue glaze with beige figures and black lines.

Beige areas reserved with wax emulsion on the raw glaze; whole piece brushed with concentrated cobalt sulphate solution; piece covered with wax emulsion; lines incised through wax; surface washed with black stain which filled the lines and collected in globules on the wax.

Fired to cone 06 bisque, cone 8 glost; Body II; Stain #1; Glaze I.
Covered jar

9½ " high

Glossy gold colored glaze over buff body with inlaid black lines.

Design incised in moist clay; washed with black slip; surface scraped when dry. Transparent glaze.

Fired to cone 05 bisque and glost; Body III; Slip #1; Glaze VIII b.
PLATE XXXII

Bowl

8" diameter

Through a transparent glaze the light grey body is revealed on which concentric brushings of coppery brown and raised spiralings of dark blue have been placed.

Brushings of brown stain applied to moist greenware; linear pattern slip-trailed; vapor glazed.

Fired to cone 6 glost; Body II Stain #7 and Slip#8; Salt glaze.
Bottle and stopper

22½" high

Monochromatic decoration in a tweedy blue-flecked brown matte glaze, with flow marks reversing the conical contour, and with variable width bands of a lighter value lying in vertical correspondence to the shape.

Stripes reserved on the raw white body with wax emulsion; light spray of black slip; brown matte glaze applied to the bisque.

Fired to cone 06 bisque, cone 4 glost;
Body V; Slip #2; Glaze IIIa.
Bottle and stopper, CARNIVAL

26" high

Iridescent gunmetal and green glaze with black lines over beige figures.

Beige areas reserved on the raw glaze with wax emulsion; bottle brushed with a concentrated solution of copper sulphate; the whole surface waxed; lines incised through the waxed glaze; wash of stain to fill lines with black surface blotted to remove excess stain.

Fired to cone 06 bisque, cone 8 glost; Body II, Stain #3; Glaze I.
The Ceramic Language is Rich

A worthwhile ceramic piece is one that is rich in meaning. Its content is expressed through a characteristic language. The extensive historical uses of ceramics for architecture, sculpture, toys, and home needs give evidence of its adaptability as a means of expression.

It is not unusual that the ceramic language, both in its elements common to other arts, such as line and color, and in its unique idioms, such as soft to hard progression, should come under observation, for this is consistent with the twentieth century approach to the arts. To clear away history's cobwebs, traditional elements have to be examined in terms of the present. Fatigued symbols and exhausted thought patterns have to be freshened or retired, and a beginning instigated on the basis of what we have to work with. Borrowing primitive or oriental patterns may help our perspectives, but rarely gives us answers. Within the variations of methods, tools, and the material we inherit, discover, and invent lies a rich source for symbolic experimentation, though also the dangers of the mere exploitation of the technique and the monumentalizing of the methods.
Many meanings can accrue to clay in the process of being shaped. Aesthetic significance and coherency are always goals of the ceramic artist. Knowledge of how the material accommodates itself guides him intuitively into investing his shapes with meanings that, however extended, remain in harmony with the substance. The potter, for example, finds in the interaction between the soft clay, the wheel, and himself a potential for expressing in form such feelings as relaxation, tension, contraction, swelling, withdrawal, unfolding, soaring and sensuousness. The bottle and pitcher in Plate XXXV are attempts to convey tense withdrawal, whereas the casserole in Plate XXVI kinesthetically shifts from tension to relaxation.

Plasticity is perhaps the quality most commonly associated with clay, the quality exciting the most empathic response. Admiration for this quality leads some critics to insist that the sense of plasticity be fully retained in the final product. Clay, however, has many guises. In various stages from liquid to dry, it has different qualities. Each of these conditions enlarges the vocabulary and requires different methods of handling. To attain the broadest meaning it is important that the material quality, whether stressed or subdued, remain sensibly a component part of the finished piece.
and consistent with the whole.

Decoration may emerge as the bi-product of the shaping, but its symbol-invoking power can be increased as its own language is expanded. The condition of the surface in its pliability or resistance is part of the language of decoration, as are the viscosity or fluidity of the decorating material. Chemical reactions occur that become random remarks of color, texture, depth, and density. Such occurrences then suggest and invite planned statements. The nature of the tools employed -- fingers scriber, knife, sponge, brush -- in scraping, smoothing, smearing, or incising gives clues to how they can be used to convey ideas.

Among the pieces illustrated, resources found in materials, tools, and processes are abundant. Extensive use of wax as a resist is evident throughout. The beaded effects of water on a waxy surface are reflected in glaze textures (Plate XXXVI) and the variations in moisture absorption of a partially waxed surface appear in distinctively shadowed edges (Plate XXXVII). The usefulness of wax in masking areas permits an unusual freedom of combination in handling detail (Plate XXXVI).

The large urn in Plates XXXVIII and XXXIX is a good example of the exploitation of the plastic condition of the clay in animating the surface. Fingers,
sticks, bottle caps, screening, and bent wires, pressed into the soft walls of the thrown piece have left decorative imprints. Local counterpressure from the inside has raised and lowered the cylinder-like plane in areas, resulting in a decoration that can be read with the fingertips as well as the eye.

The grooves and concavities of the figures on the carved bottle in Plate XL have a stylistic precision appropriate to the scraping of a steel cutting-spoon on hardened clay. The porcelain bottle in Plate XLI shows both the variable line weight characteristic of brush strokes and the liquid tension of the slip in the dotting process.

In the large bowl in Plate XLII, the viscosity of the glaze has permitted the bands of random lines to retain the preciseness of their inlay. Very close to this pattern in process is the decoration of the jardiniere in Plate XLIII, where an over-spray of more fluid glaze has softened the lines and caused whole sections of the inlay to slide intactly. Another variation is shown on the covered jar in Plate XLIV. Here the glaze-inlaid lines of the cats slipped with the body glaze to assume a furry texture, while retaining the quality of their needle-etched origin.

The condiment bottle in Plate XLV illustrates a
chemically achieved effect for which Glazes III and IV were developed — that of acting on underlying colors and bringing them to the surface as infiltrated patterns and shadows. Another glaze behavior pattern that was discovered and utilized is shown on the bowl in Plate XLVI, where the glaze color reacted over the black stain decoration to leave pale auras around each motif.

In reference to the language of ceramic art, the firing process warrants special mention as a means of art expression unique to ceramics. The fusion of clay bodies with other materials applied to their surfaces can be more than a physical asset. In the problem of relating decoration to shape, the firing process effects an integration of the two-dimensional and three-dimensional factors. The vase reproduced in Plate XLVI welds multiple and interpenetrating levels of color and texture with such a sense of integration.

The effects of fusion are of particular interest at present, because shallow pictorial depth and the maintenance of surface integrity, even where the third dimension is suggested, are prominent goals in the twentieth century visual arts. With glazes it is possible to achieve translucency, transparency, infiltration and other effects conducive to a sense of movement between
the surface and the substance of the ceramic piece. Thus fusion can literally extend the three-dimensional nature of the object which it sheathes.

The large flaring bowl, shown in bisqued and glazed stages in Plate XLVII, illustrates an in and out movement of surface. The flat black and white of the bisque, like a line drawing, is forged by the glaze into a surface in which white lines and colored greys appear to be buried in varying depths. Similar to this in decoration is the shallow bowl in Plate XLVIII, though the concentric bands of color give depths that are less fluctuating. A sense of thickness is communicated by the stony texture, and, precise as the edges are, they retain their molten quality. In Plate XLIX, the depth to which the black lines are inlaid is visible to the eye, but, in firing, the inlaid material has moved upward and feathered over the upper glaze surface.
PLATE XXXV

Pitcher

15" high

Beige pattern lying somewhat indistinctly on a faded blue background.

Beige areas reserved with wax emulsion on the raw glaze; exposed areas sprayed with concentrated solution of cobalt sulphate.

Fired to cone 06 bisque, cone 8 glost; Body II; Glaze I.

Bottle and stopper

12" high

Tweedy red brown glaze with random vertical stripes of blue black.

Bisque piece painted with slip, the color of which filtered through the sprayed glaze.

Fired to cone 06 bisque, cone 3 glost; Body V; Slip #2; Glaze IIIa.
Bowl, DRY PLANTS

16" diameter

Segments of yellow and khaki serve as a background for white plants with superimposed and generally coinciding black lines; the whole surface is heavily speckled with black.

White areas reserved on greenware with wax emulsion; surface washed with yellow stain; areas of yellow reserved with wax; surface washed with khaki stain; whole interior waxed; lines incised; wash of black stain to fill lines and collect in heavy globules on the waxed areas. Transparent glaze.

Fired to cone 2 bisque, cone 04 glost;
Body V; Stains #10, #14, and #5;
Glaze XIII inside, Glaze XII outside.
Bowl

7" diameter

Copper-toned loops and bars against a flecked medium grey; darker blue-grey interior.

Decoration brushed on to raw glaze surface with concentrated solution of tin choride.

Fired to cone 04 bisque, cone 2 glost; Body mixture of equal parts of I and II; Glaze V and Vb.
Covered urn, DRIED FLOWERS

18" high

Impressed decoration under a matte glaze in tints of blue-grey with mottling of grey-green in the background.

Decoration pressed into soft clay walls with sticks, bottle tops, and bent wires; bisque piece sprayed lightly with black slip; surface cleaned with steel wool; covered with white matte glaze; background stippled with blue-green underglaze stain; whole surface lightly sprayed with base glaze.

Fired to cone 04 bisque, cone 2 glost; Body V; Slip #2; Glaze III.
Bottle and stopper, THE CHASE
9 3/4" high

White matte glaze over an incised and relief carved pattern.

Decoration cut into damp greenware.

Fired to cone 04 bisque, cone 2 glost;
Body V; Glaze III.
Bottle and stopper
8½" high

Dark brown lines and dots against a sulphurous yellow satin-matte glaze.

Greenware brush-decorated with brown slip; yellow transparent glaze.

Fired to cone 06 bisque, cone 10 glost;
Body IV; Slip #6; Glaze II.
Bowl, MATCHSTICKS

1¼" diameter

White brown-speckled matte glaze on the outside with concentric band arrangement of short black lines varying in length, direction, and spacing; light blue-grey matte glaze with brown speckles inside.

Exterior of the bowl covered with wax emulsion over the raw white glaze; lines incised; black stain washed over incisions; piece warmed to destroy waxy surface; lightly over-sprayed with basic glaze; raw white glaze of interior sprayed with concentrated nickel nitrate solution.

Fired to cone 06 bisque, cone 3 glost; Body V; Stain #4; Glaze IIId.
Jardiniere, BLIND ARCADES

10\frac{1}{2}'' high

White matte surface supporting areas of pale grey-blue and a black linear pattern that is alternately rigid and relaxed.

Sections of the white matte raw glazed piece washed with nickel nitrate; surface covered with wax emulsion; design incised; wash of black stain to fill lines; piece warmed to recover porosity; lightly re-glazed with a lower maturing white matte glaze.

Fired to cone 06 bisque, cone 3 glost; Body V; Stain #3; Glazes III and IV.
Covered jar, CATS #1
8" high

Irridescent gunmetal-and-green glaze with accents of beige and etched black drawings superimposed.

Beige areas reserved with wax emulsion on the raw glaze; concentrated copper sulphate solution brushed over exposed raw glaze; outer surface completely waxed; decoration etched with the point of a needle; wash of black stain to fill incisions.

Fired to cone 06 bisque, cone 8 glost; Body II; Stain #3; Glaze I.
Bottle and stopper

11" high

Feathery grey twisting lines arranged vertically on a tan-speckled white matte body glaze.

Black lines painted on the bisque piece and infiltrating the sprayed opaque glaze.

Fired to cone 06 bisque, cone 3 glost; Body V; Slip #2; Glaze IIId.
Bowl, DEER
10" diameter

Black animal-and-tree pattern against a dark iridescent green background which fades to a brighter green aura around each motif.

Decoration painted with black underglaze stain on the bisque; piece sprayed with transparent yellow-green glaze.

Fired to cone 06 bisque, cone 04 glost in a slightly reducing atmosphere; Body III; Glaze Xb.
PLATE XLVII

Vase

6½" high

Semi-opaque mossy green glaze lying in a linear pattern over the darkened body of the piece.

Buff body partially covered with a thinly brushed coat of black slip; bisqued; covered lightly with transparent glaze, sprayed with concentrated potassium dichromate solution, and re-covered with semi-opaque white glaze.

Fired to cone 05 bisque and glaze;
Body III; Slip #3; Glazes VII and X.
Bowl

16\(\frac{3}{4}\)" Diameter

Mixed milky white to blue-grey color with white linear decorations.

Sgraffito pattern incised through black slip; glazed semi-opaque satiny white.

Fired to cone 01 bisque, cone 04 glost; Body V, Slip #2; Glaze VII.
Shallow bowl

11\(\frac{1}{2}\)" diameter

Alternating concentric bands of beige and red-brown semi-matt glaze with superimposed black linear pattern.

Beige bands reserved with wax emulsion on the raw glaze; red-brown glaze brushed over absorbent areas; whole piece waxed; lines incised through wax; surface washed with black stain; surface blotted, leaving black in the lines only.

Fired to cone 06 bisque, cone 8 glost; Body II; Stain #1; Glazes I and Ig.
PLATE L

Vase

8" high

Horizontal bands of white and light grey-blue matt glaze with superimposed black feathered line patterns.

White areas reserved with wax emulsion on the raw glaze: wash of concentrated nickel sulphate solution to make unwaxed areas blue; whole piece waxed; lines incised; incisions filled with a wash of black stain, which became fluid in firing and spread over adjacent glaze.

Fired to cone 06 bisque, cone 3 glost; Body V; Stain #2; Glaze III.
Decoration is Part of the Design Synthesis

Ceramic art, like other fields of study, provides many avenues for exploration. Technical aspects of clay and glaze structure present intriguing research problems that demand continuous attention; the manipulation of clay into controlled forms is a perennial challenge; and the materials offer infinite opportunities for expressing complex content within their limitations. These avenues for exploration are not only delightful, inspiring, and significant for the ceramic artist, but are also his means for direct involvement in the problem of conceiving and executing objects which function always aesthetically and frequently with utility in everyday living.

When one works creatively toward coherent artistic totals, all the avenues of exploration and invention are ultimately bound up in a larger system in which all parts are mutually affective. Creativity follows no simple logic. The growth pattern of a weed underfoot or a glaze drip can start the chain reaction of the creative process. As one works in a given field, it becomes increasingly difficult to isolate beginning points, as the component elements become so imbued with simultaneous and
congruent meanings from the others. A shape, a material, a tool, or an extraneous image may inspire a decoration, but, to do so, must be seen through an imaginative eye. In the cycle of realizing an art creation, parts may be examined for theoretical study, but ultimately all the design elements must be harmoniously embodied in object form, each contributing to the kind of total which is more than the sum of its parts. Synthesis distinguishes the artistically worthwhile from the commonplace.
Appendix: Technical data.

Clays.
Colored slips and stains.
Glazes.
Body I: Bedford shale, cone 04
George Fetzer, 1205 Seventeenth Ave., Columbus, O.

Body II: Zanesville stoneware, cone 6-9
Zanesville Stoneware Co., Zanesville, Ohio.

Body III: Indiana stoneware, cone 04-3
Pewabic Pottery, 10125 E. Jefferson, Detroit, Mich.

Body IV: Scandinavian porcelain, cone 10-11
(O.S.U. School of Fine and Applied Arts)
Keystone feldspar----------25
Edgar Plastic kaolin--------47
Flint----------------------25
Bentonite------------------3

Body V: White stoneware, cone 1-4
(from the formula of Trina Paulus, O.S.U. School of Fine and Applied Arts, with substitutions for the Cherokee kaolin and C. and C. ball clay.)
Nepheline syenite----------48
Flint----------------------5
Edgar Plastic kaolin-------20
Tennessee ball clay #7-----25
Talc-----------------------2

Body VI: Grogged pink sculpture clay
George Fetzer, 1205 Seventeenth Ave., Columbus, O.
COLORED SLIPS

1. White:  
CH₃ clay-------90  
Tin oxide-------10

Bedford shale----------100  
Iron oxide------------10  
Copper oxide----------5  
Cobalt oxide----------5  
Manganese dioxide-----5

3. Black: Lightly stirred mixture of -  
Masons Underglaze Black No. 299--------50  
Bedford shale-------------------------50

4. Black: Mason's Underglaze Black No. 158-------50  
Body V-----------------------------50

5. Brown: Mason's Underglaze Chestnut Brown No. 204--10  
Body V--------------------------------90

Body IV--------------------------------80

7. Brown: Barnard clay

8. Blue: Harshaw Blue Stain No. 1166P----------------8  
Body II--------------------------------92

9. Blue: Mason's Underglaze Delft Blue No. 2820-----20  
Body V--------------------------------80
COLORED STAINS

1. Black: Masons Underglaze Black No. 299--------25
   Ferro frit 3134------------------------25
   Glaze I-------------------------------50

2. Black: Masons Underglaze Black No. 299--------25
   Ferro frit 3134------------------------75
   Bentonite-----------------------------5

3. Black: Masons Underglaze Black No. 299--------50
   Ferro frit 3134------------------------50
   Bentonite-------------------------------10

4. Black: Masons Underglaze Black No. 299--------8
   Barnard clay----------------------------52
   Glaze VIII-------------------------------40

5. Black: Masons Underglaze Black No. 158-------50
   Ferro frit 3396------------------------50
   Bentonite-------------------------------5

6. Brown: Iron oxide------------------------95
   Chromium oxide------------------------5

7. Red brown: Tin oxide----------------------60
   Iron oxide-----------------------------30
   Bentonite-------------------------------10

8. Purple brown solution: Iron sulphate--------75
   Potassium dichromate-------------------25

9. White: Tin oxide------------------------50
    Ferro frit 3134------------------------50
    Bentonite-------------------------------5

10. Yellow: Masons Underglaze Vanadium Yellow
     No. 301-------------------------------50
     Ferro frit 3396------------------------50
     Bentonite-------------------------------5

11. Green: Masons Underglaze Olive Green No.90---50
     Ferro frit 3396------------------------50
     Bentonite-------------------------------5
12. Brown:  Iron oxide-------------------------95
             Chromium oxide-------------------5

13. Blue:   #4 Black slip-------------------70
             Glaze VII------------------------30

             Masons Underglaze Vanadium Yellow
             No. 301----------------------------25
             Ferro frit 3396---------------------50
             Bentonite--------------------------5

15. Blackish brown: Masons Underglaze Red Brown
             No. 204--------------------------25
             Glaze XIV------------------------75
GLAZE 1

9N9E Beige Stone Matt, cone 7-10

Molecular formula:

\[ \begin{align*}
0.065 \text{Na}_2\text{O} \\
0.226 \text{K}_2\text{O} & \quad 0.556 \text{Al}_2\text{O}_3 \quad 3.44 \text{SiO}_2 \\
0.698 \text{CaO} & \quad 0.080 \text{Fe}_2\text{O}_3 \\
0.011 \text{MgO}
\end{align*} \]

Batch formula:

- Michigan slip \( 48.4 \)
- Keystone feldspar \( 25.8 \)
- Whiting \( 10.8 \)
- Calcined kaolin \( 10.2 \)
- Rutile \( 4.9 \)

Colorants:

a) Light blue grey \( 1\% \) cobalt oxide
b) Medium grey blue \( 2\% \) cobalt oxide
c) Medium grey green \( 2\% \) copper carbonate
d) Medium purplish brown \( 3\% \) manganese dioxide
e) Dark purplish brown \( 6\% \) manganese dioxide
f) Lavender grey \( 3\% \) iron chromate
g) Medium red brown \( 6\% \) tin oxide
    \( 3\% \) iron oxide

Characteristics:

Apply glaze very heavily for maximum stoniness. Thin areas usually turn shiny transparent khaki. The glaze is viscous and stable at cone 7-8, except where the action of manganese dioxide fluxes it and imparts beginnings of a sugary texture. After cone 8 the texture begins to break out with glossy particles. At cone 9, cobalt oxide breaks through shiny patches as a pleasant opalescent dark blue.
GLAZE II

Transparent, cone 8-10

Molecular formula:

\[ \begin{align*}
.500 \text{ CaO} & \\
.250 \text{ KNaO} & + \frac{1}{4} \text{ Al}_2\text{O}_3 & 2.16 \text{ SiO}_2 \\
.250 \text{ ZnO} & 
\end{align*} \]

Batch formula:

Keystone feldspar \( \cdots \cdots \cdots 40.5 \)
Cornwall stone \( \cdots \cdots \cdots 25.5 \)
Whiting \( \cdots \cdots \cdots 18.9 \)
Zinc oxide \( \cdots \cdots \cdots 7.8 \)
Edgar Plastic kaolin \( \cdots \cdots \cdots 7.2 \)
\[ \text{Total} = 99.9 \]

Colorants:

a) Saffron yellow --- 6% Harshaw's G5100 Yellow Stain
b) Blue-green --- 2% copper oxide
  \( \text{1% chromium oxide} \)

Characteristics:

Applied to tissue paper thinness on body IV, this glaze matures to a satin matt at cone 10 that fits. Thicker applications vary in texture from glossy to sugar-glossy, and, while they do not craze, they sometimes absorb dye stains.
2M3i White Matt, cone 2-3

Molecular formula (less zirconium):

\[ \begin{align*}
0.029 & \text{ Na}_2\text{O} \\
0.117 & \text{ K}_2\text{O} \\
0.532 & \text{ CaO} \\
0.236 & \text{ Al}_2\text{O}_3 \\
0.155 & \text{ PbO} \\
0.167 & \text{ ZnO} \\
\end{align*} \]

Batch formula:

\[ \begin{align*}
\text{Keystone feldspar} & \quad 35.0 \\
\text{Whiting} & \quad 22.3 \\
\text{Zinc oxide} & \quad 5.7 \\
\text{EP kaolin} & \quad 7.9 \\
\text{White lead} & \quad 16.7 \\
\text{Zirconium spinel} & \quad 6.8 \\
\text{Zircopax} & \quad 5.7 \\
\hline
100.1
\end{align*} \]

Colorants:

a) Frosty red brown---(6% tin oxide
   (3% iron oxide
b) Stone blue-------- 1% nickel oxide
c) Dense buff--------- 10% rutile
d) Speckled white----- 5% granular ilmenite

Characteristics:

Body stains containing compounds of cobalt, chrome, iron, or copper infiltrate from moderately to fully, depending on the thickness of the stain and the glaze application: Barnard clay=cool tan to dark brown. #4 Slip=pale blue grey to dark brown-black. The glaze fits Paulus' white semi-vitreous body and Pewabic (stoneware type) clay. On these it is eggshell matt, except that when very thinly applied it becomes glossier. It also tends toward gloss over high silica bodies or slips. Moderate to thick application works most satisfactorily. Glaze must be applied with smooth finish as granular or dusty surfaces may retain this texture.
GLAZE IV

2M31 White Matt, cone 1-2

Molecular formula (less zirconium):
\[0.028 \text{Na}_2\text{O}\]
\[0.112 \text{K}_2\text{O}\]
\[0.002 \text{MgO}\]
\[0.225 \text{Al}_2\text{O}_3\]
\[0.991 \text{Si}_2\text{O}_5\]
\[0.160 \text{ZnO}\]
\[0.505 \text{CaO}\]
\[0.194 \text{PbO}\]

Batch formula:
Keystone feldspar \[33.3\]
Whiting \[21.1\]
Zinc oxide \[5.4\]
Edgar Plastic kaolin \[7.5\]
White lead \[21.1\]
Zircopax \[5.4\]
Zirconium spinel \[6.4\]
\[100.2\]

Colorants and characteristics are similar to Glaze (2M31), of which this is a variation maturing at a slightly lower temperature.
GLAZE V

2ASR Grey-brown Glossy, cone 2-3

Molecular formula:
\[
\begin{align*}
.301 \text{ CaO} \\
.213 \text{ MgO} & \quad .412 \text{ Al}_2\text{O}_3 & 3.31 \text{ SiO}_2 \\
.088 \text{ K}_2\text{O} & \quad .319 \text{ B}_2\text{O}_3 & .22 \text{ TiO}_2 \\
.238 \text{ Na}_2\text{O} & \quad .082 \text{ Fe}_2\text{O}_3 & \\
.160 \text{ PbO} & \\
\end{align*}
\]

Batch formula:
- Albany slip---------------------— 66.7
- Ferro frit 3396-------------------28.5
- Rutile-------------------------------- 4.8

\[
\text{100.0}
\]

Colorants:
- a) Dark iridescent green-brown--3% copper carbonate
- b) Soft blue-------------------------1-2% cobalt oxide
- c) Dark brown----------------------5% manganese dioxide

Characteristics:
Heavy application lightens the colors and is necessary to achieve the furry curdled texture. On edges and areas where glaze is thinly applied, the color tends toward dark khaki transparent brown. Somewhat fluid at cone 3. Fits bodies III and V.
GLAZE VI

2M3e Semi-opaque Glossy white, cone 2

Molecular formula (less zirconium):
\[ 0.029 \text{Na}_2\text{O} \]
\[ 0.118 \text{K}_2\text{O} \]
\[ 0.533 \text{CaO} \]
\[ 0.237 \text{Al}_2\text{O}_3 \]
\[ 0.155 \text{PbO} \]
\[ 0.165 \text{ZnO} \]

Batch formula:
- Flint: 18.2
- Whiting: 18.2
- Zinc oxide: 4.6
- Keystone feldspar: 28.6
- Edgar Plastic kaolin: 6.5
- White lead: 13.7
- Zirconium spinel: 5.7
- Zircopax: 4.6

Total: 100.1

Colorants:
- a) Turquoise: 2% copper carbonate
- b) Mottled golden brown: 6% iron oxide. Thinly applied this tends toward a satin matt over Barnard clay engobe.
- c) Primrose: 6% Harshaw's G5100 Yellow Stain
- d) Greyish-purple: 2% manganese dioxide
- e) Light grey-green: 6% barium chromate. Interesting green and warm tan mottling over Barnard clay engobe.

Characteristics:
A good base glaze that fits Body III and Body V. Soluble salts can be applied effectively on the raw glaze.
GLAZE VII

3482-DX, Semi-opaque Satiny White, cone 06-04 (Tam Zirconium Glazes, Titanium Alloy Mfg. Co., Niagara Falls, N.Y., 1944.)

Molecular formula, without magnesium zirconium silicate:

\[ \begin{align*}
0.175 \text{Na}_2\text{O} & \\
0.033 \text{K}_2\text{O} & \\
0.106 \text{CaO} & \\
0.686 \text{PbO} & \\
0.149 \text{Al}_2\text{O}_3 & \\
0.527 \text{B}_2\text{O}_3 & \\
1.72 \text{SiO}_2 & \\
0.026 \text{ZrO}_2 & \\
\end{align*} \]

Batch formula:

\[ \begin{align*}
\text{Ferro frit G24} & \quad 32.4 \\
\text{Ferro frit G23} & \quad 32.4 \\
\text{Edgar Plastic kaolin} & \quad 6.5 \\
\text{Lead silicate} & \quad 8.6 \\
\text{Zircopeax} & \quad 15.5 \\
\text{Magnesium zirconium spinel} & \quad 4.6 \\
\end{align*} \]

\[ \text{Total} = 100.0 \]

Colorants:

\begin{align*}
a) \ & \text{Turquoise green} \quad 3\% \ \text{copper carbonate} \\
b) \ & \text{Yellow green} \quad 1\% \ \text{chromium oxide} \\
\end{align*}

Characteristics:

Matt quality of glaze is emphasized at lower firing ranges. At cone 04 it is more glossy, more fluid, and more translucent. Chrome and cobalt understains tend to filter through to the glaze surface. Soluble salts can be used effectively on the raw glaze. The glaze fits Body I. On Body II at cone 05 it gives a strong crackle pattern.
GLAZE VIII

5301A Semi-transparent, cone 06-04 (O.S.U. School of Fine and Applied Arts).

Molecular formula:
\[
\begin{align*}
0.138 & \text{K}_2\text{O} \\
0.392 & \text{Al}_2\text{O}_3 \\
0.501 & \text{Na}_2\text{O} \\
0.085 & \text{AlF}_2 \\
0.262 & \text{NaF} \\
0.099 & \text{NaF}_2 \\
\end{align*}
\]

Batch formula:

\[
\begin{align*}
\text{Ferro frit 5301} & \quad \text{-------------------} \quad 65.5 \\
\text{Raw borax} & \quad \text{-------------------} \quad 16.7 \\
\text{Edgar Plastic kaolin} & \quad \text{-----------} \quad 11.8 \\
\text{Antimony oxide} & \quad \text{------------} \quad 2.0 \\
\text{Bentonite} & \quad \text{-------------------} \quad 3.9 \\
\text{Total} & \quad \text{-------------------} \quad 99.9
\end{align*}
\]

Colorants:

a) Golden yellow---------5% sodium uranate
b) Gold to beige--------5% iron oxide
c) Turquoise green-------3% copper carbonate

Characteristics:
The glaze is glossy and opalescent. Some underglaze colorants are partially absorbed into the glaze and this action can be used to good effect. Soluble salts brushed over raw glaze give effects of transparent water-color washes. The glaze fits Body I adequately at cone 06; fired to cone 04 it tends to shatter the piece. The glaze crazes heavily on Bodies III and VI. Clay bodies can be reduced without noticeably affecting the uncolored glaze.
GLAZE IX

Bacchus Black, cone 07-04 (O.S.U. School of Fine and Applied Arts).

Molecular formula:
\[
\begin{align*}
&0.682 \text{ PbO} \\
&0.062 \text{ CaO} \\
&0.079 \text{ Al}_2\text{O}_3 \\
&1.94 \text{ SiO}_2 \\
&0.062 \text{ KNaO} \\
&0.192 \text{ ZnO}
\end{align*}
\]

Batch formula:

\[
\begin{align*}
\text{White lead} & = 53.6 \\
\text{Whiting} & = 1.9 \\
\text{Maine feldspar} & = 13.7 \\
\text{Zinc oxide} & = 4.8 \\
\text{Calcined kaolin} & = 1.0 \\
\text{Flint} & = 24.9 \\
\text{Total} & = 99.9
\end{align*}
\]

Colorants: Black.

\[
\begin{align*}
\text{Cobalt oxide} & = 2.3 \\
\text{Manganese carbonate} & = 7.2 \\
\text{Rutile} & = 3.3 \\
\text{Copper oxide} & = 1.0
\end{align*}
\]

Characteristics:
The glaze has a gunmetal texture. Above cone 06, it becomes very fluid. It fits Bodies I and VI.
GLAZE X

LSL Transparent, cone 07-04 (O.S.U. School of Fine and Applied Arts.)

Molecular formula:

\[ 0.307 \text{SiO}_2 \]

\[ 1.0 \text{PbO} \]

\[ 0.122 \text{SnO}_2 \]

Batch formula:

White lead -------------- 85.7
Flint ------------------- 4.1
Tin Oxide ------------------ 6.1
Bentonite ------------------ 4.1
\[ \text{Total: 100.0} \]

Colorants:

a) Bright yellow ------- 1\% chrome oxide
b) Yellow green ------- 1\% chrome oxide
1\% copper carbonate

Characteristics:

This transparent glaze takes on some opacity when applied thickly. It chemically attacks the body, and hence the texture varies with thickness of glaze and supporting body. It requires skillful handling over colored stains for the same reason. The tin oxide content gives interesting color effects in the way it affects coloring agents. Applied over iron-bearing bodies this glaze gives particularly rich red-browns, often curdled. Above cone 06 it becomes very fluid. It fits Body I. Thinly applied to other bodies it can be used to give a moist appearance, and is useful in this way for terra cotta sculpture.
GLAZE XI

CCT-S Transparent, cone 06-04 (O.S.U. School of Fine and Applied Arts.)

Molecular formula:

\[
\begin{align*}
0.080 \text{ PbO} \\
0.316 \text{ Na}_2\text{O} \\
0.574 \text{ CaO} \\
0.691 \text{ B}_2\text{O}_3 \\
0.344 \text{ Al}_2\text{O}_3 \\
3.147 \text{ SiO}_2
\end{align*}
\]

Batch formula:

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<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
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<tr>
<td>Ferro frit 3396</td>
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</tr>
<tr>
<td>Ferro frit 3134</td>
<td>45</td>
</tr>
<tr>
<td>Edgar Plastic kaolin</td>
<td>25</td>
</tr>
<tr>
<td>Flint</td>
<td>15</td>
</tr>
<tr>
<td>Bentonite</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>101</strong></td>
</tr>
</tbody>
</table>

Colorants:

a) Mottled green grey  
   - 5% chromium oxide  
   - 1% copper oxide  
   - 3% iron oxide

Characteristics:

This is a clear transparent glossy glaze, useful for application over slip and underglaze decoration. It fits Body I.
Dark Ivory Matt, cone 04-03

Molecular formula:
\[0.724 \text{ PbO} \]
\[0.221 \text{ CaO} \quad 0.24 \text{ Al}_2\text{O}_3 \quad 0.86 \text{ SiO}_2 \]
\[0.053 \text{ KNaO} \]

Batch formula:
White lead------------------- 60.6
Whiting---------------------- 7.2
Maine feldspar-------------- 13.1
Edgar Plastic kaolin--------- 15.1
Rutile----------------------- 4.0
\[100.0 \]

Characteristics:
Apply heavily and smoothly to assure vitrified surface. Underlying colors infiltrate the glaze. Glaze breaks into glossiness over high silica bodies, e.g., Body V.
GLAZE XIII

"D" Transparent Semi-matt, cone 07-03 (O.S.U. School of Fine and Applied Arts.)

Molecular formula:
\[
\begin{align*}
\text{PbO} & : 0.55 \\
\text{ZnO} & : 0.40 \\
\text{Al}_2\text{O}_3 & : 0.13 \\
\text{SiO}_2 & : 1.27 \\
\text{Na}_2\text{O} & : 0.05
\end{align*}
\]

Batch formula:
\[
\begin{align*}
\text{White lead} & \quad 54.7 \\
\text{Zinc oxide} & \quad 11.6 \\
\text{Maine feldspar} & \quad 8.7 \\
\text{Kaolin} & \quad 7.7 \\
\text{Flint} & \quad 17.3 \\
\text{Total} & \quad 100.0
\end{align*}
\]

Characteristics:
This waxy, yellowish glaze gives a satiny finish to slip-decorated ware where the colorants are not affected by its lead-zinc combination. It fits Body I. At cone 04, it can be used over Body V which has previously been bisqued to cone 2 to achieve a creamy coloration.
GLAZE XIV

Milky Matt, cone 04-03 (O.S.U. School of Fine and Applied Arts.)

Molecular formula:
.088 KNaO
.629 PbO
.140 CaO
.143 BaO
.204 Al₂O₃
1.59 SiO₂

Batch formula:
White lead ------------------------ 47.64
Kaolin --------------------------- 8.78
Flint ---------------------------- 14.07
Whiting ------------------------- 4.15
Barium carbonate ----------------- 8.12
Glaze feldspar #54 --------------- 11.65
Maine feldspar --------------- 3.54
Rutile -------------------------- 2.02

Characteristics:
The satiny surface of this glaze is tinged with yellow. Glaze viscosity is retained at cone 03
and decoration on or in the glaze does not slip. It fits Body I. High flint clays under this
glaze promote a glossy texture.
I, Murray Douglas, was born in Syracuse, New York, May 7, 1915. My education through secondary school was received in the public schools of Detroit, Michigan. I obtained my undergraduate training at Wayne University, from which I was graduated in 1936 with the Bachelor of Science degree; I received the degree Master of Arts in 1940 from The Ohio State University. I also attended The Cranbrook Academy of Art, Bloomfield Hills, Michigan, and The University of Paris, France. From 1936 to 1950 I was in charge of the art program at Brookside School Cranbrook, Bloomfield Hills, Michigan. I began teaching evening classes in ceramics at Wayne University in 1947 for the Art Education Department as a Special Instructor. In 1950 I was appointed Assistant Professor of Art Education at Wayne University, and was subsequently promoted to the rank of Associate Professor in 1953.