

Industrial Design: Tableware

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Abstract

The goal of my graduate thesis is to design a dinner service set suitable for mass manufacture. The purpose of completing an academic study of dinnerware as an industrial designer is to gain a mastery of a product used everyday in and out of the home. With such a rich history in ceramics, it is challenging to design a new dinner service set that is functional, enhances the aesthetics of a meal and sustains the intimate relationship of everyday use by adapting to lives. My particular design ideals are expressed in the line quality, section, volume, breadth and visual language of the Galaxy Collection. This document is a record of the research and decision making process for the design of the dinner service.

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“That they lived beauty in their practical life is truly their greatest service.”

Soetsu Yanagi
The Unknown Craftsman, A Japanese Insight into Beauty

I dedicate this book to Paul, our family, and friends for your love and support.

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Design Brief

The goal of my graduate thesis is to design a dinner service set suitable for mass manufacture. The purpose of completing an academic study of dinnerware as an industrial designer is to gain a mastery of a product used everyday in and out of the home. With such a rich history in ceramics, it is challenging to design a new dinner service set that is functional, enhances the aesthetics of a meal and sustains the intimate relationship of everyday use by adapting to lives.

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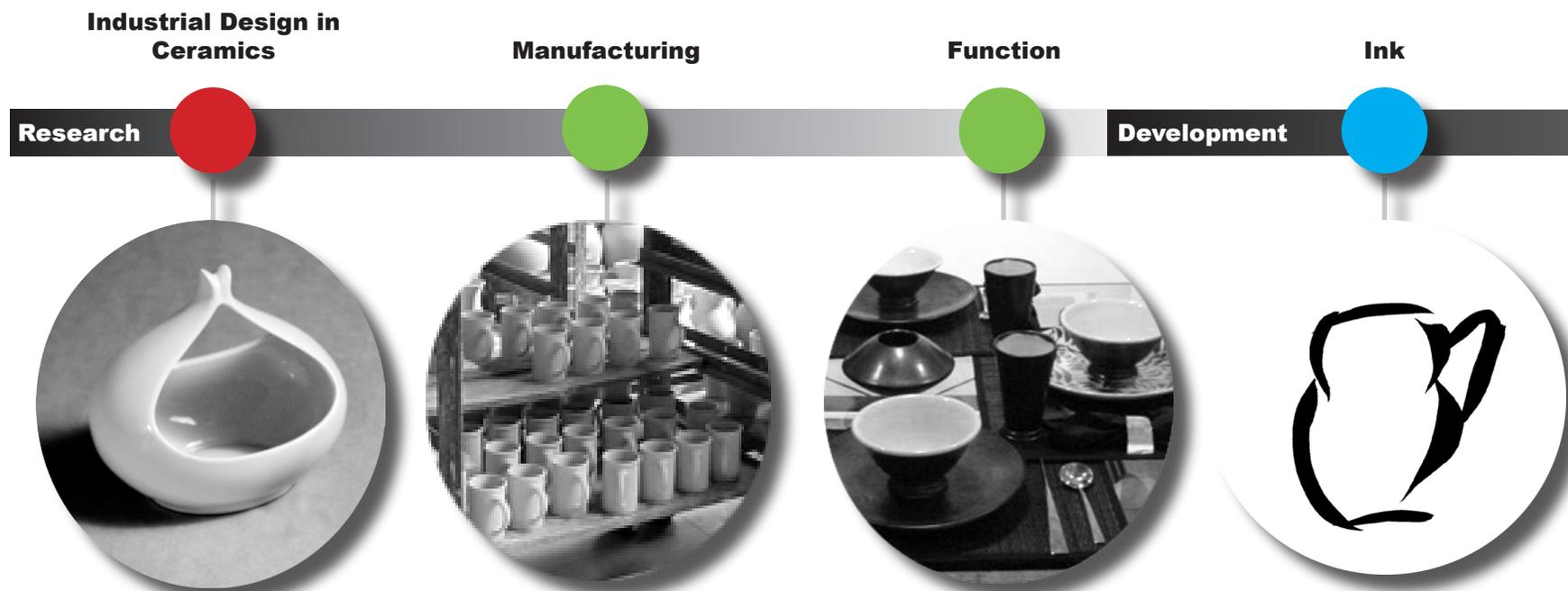
From the roots of ceramic history, we find evidence of clay objects being made to serve the needs of many people. These objects had functional, ritual and aesthetic purpose.

Beginning the design process with studying historical pots lays the foundation for understanding how containing and serving food has developed with the needs of civilization. The study of industrial designers from the 20th century provides a model for designing mass produced objects that maintain the connection to human factors.

Far from hand pinching each bowl by hand, industrial design in tableware today involves highly automated processes. The three components to creating a successful product through industrial design are manufacturing, meeting functional needs of the user and the formal qualities.

The manufacturing component of the thesis was satisfied by visiting three facilities that currently produce tableware. Emerson Creek Pottery, Homer Laughlin China Company and the Corelle Pressware Plant operate different sizes and types

1 Time Line of Study



Tableware evolved with changing human needs. Understanding this human connection drives my study of tableware. Industrial designers from the 20th century demonstrate successful methods for ceramic product design.

Visiting manufacturing facilities ensures the Galaxy Collection is suited for modern production techniques.

A survey identifies dining habits and buying factors for dinnerware. Food service professionals report on dining experiences and how they are influenced by dinnerware.

Sketching is a critical part of the design process from beginning to end. Ideas flow between conceptual drawings and models to arrive at a final design.

of facilities. On each visit I studied the design and production of products. I identified methodologies of design and production criteria for current automated machinery.

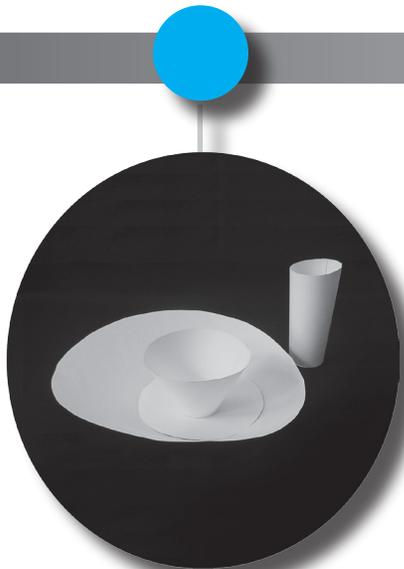
The functional needs for food containment and service in today's society can not be identified through a historical study alone. Current eating habits and buying factors were determined by conducting a dinnerware survey. Identifying what people own and use confirmed the pieces necessary for a complete dinner service design.

The formal qualities of the set were determined by a long transformation of ideas. Beginning with as many ideas generated as possible, a series of gesture drawings, sketches and volume studies focused the path of form. The process volleyed between sketches and models until its completion.

The use of models was critical to the decision making process. A study of model making in the industry set up a comparison of paper, clay, plaster and nylon models. Each material and model type has been identified for its purpose in the conceptual process and production of the dinner service.

Hope lies at the end of this process for a dinner service that looks beautiful on the table and fabulous with food. The gift of being an industrial designer is potentially making a product that people enjoy using every day. Containing and serving food is a timeless need that can be well met by the Galaxy Collection.

Paper



Flat paper patterns pulled into round and square forms determined scale and variation in the set.

Clay



Clay models were pivotal in identifying the wide rim as a crucial component of the Collection.

Plaster



Plaster is a traditional model making material for the dinnerware industry. The square set was confirmed to be successful in this stage of modeling.

Nylon



Rapid prototyping in nylon is a new technology for the dinnerware industry. The Galaxy Collection is modeled in nylon, this stage confirmed dimensions and the addition of drinking vessels to the set.

Evolution of Tableware

Pottery developed at a time when community living first brought a more efficient division of labor, allowing for individuals to specialize their skills in hand crafts. For example, in ancient China one family might have been responsible for making clay vessels and firing them in a kiln outside the community walls while others tended fields. (Thorp) Specialization in the production of functional objects to fulfill the requirements of many people is a prelude to industrial design.

Understanding the development of form sets historical precedent for what tools people need when they are eating. Nomadic hunters used their hands and animal skins as tools for eating. Trays made of bark and hollowed-out gourds served the basic need for food containers. Stationary communities of families and clans formed with the evolution of agriculture. This shift in culture changed the needs for storing food. Vessels that were more sturdy could be used now that they were not being carried from camp to camp. (Charleston)

Details of clay objects varied regionally due to cultural and religious considerations, Forms followed function for early designers of clay objects. The shape of the opening on a vessel can stop water from splashing out while walking or keep bugs out. Vessels for eating took their shape from the hands that pinched the clay, cupped like leaves once used for drinking. It is often easy to identify the origin of pots because of these characteristics. (Hopper)

The Greeks made use of jugs with small vertical handles. A rope would be tied to the handles for transporting the vessel, so the size of the form was determined by what one could carry. The surface of the clay was burnished, sealing the pores and providing a glossy finish to the slip decoration. (Charleston)

Archaic China is known for its footed cooking vessels. The footed clay pieces were used for cooking over an open fire. Similar forms out of bronze have been recovered from burial sites, but not as many clay ones have survived. The vessels indicate early ceremonies when wine might have been warmed. China saw the development of higher firing temperatures, glazes and porcelain clay. (Thorp)

As trade routes developed, the transmission of ideas and styles moved between Asia, the Middle East and Europe. The Italians, for example, developed majolica in an attempt to imitate porcelain. Majolica is a regional red earthenware clay painted with a white tin glaze and decorated. (Charleston) This time period in Europe is also marked by wider pots for cooking with larger handles and lugs. (Hopper)

It is critical to make the connection between the design of dinnerware and the need to cook, contain and serve food every day. Greece, China and Europe are just three examples of places where fads, special occasions and daily habits influence the design of objects.

Dining rituals today have developed from a mixture of cultural habits. In the 149 households surveyed for this thesis, 66% of them bought the dinnerware that they are using, 41% were given dinnerware as gifts or inheritance. Durability has been identified as an important feature because of wear and tear in a microwave, dishwasher, or the hands of kids.

With 70% of people still eating around a kitchen or dining room table, taking advantage of design opportunities is refreshing for the traditional table setting. The design of the same dinner service can also cater to the more mobile or casual eater. Designing dinnerware that can be handled easily while sitting on the porch, lounging in front of the TV, or working on the computer creates a comforting connection with an object.

20th Century Design: Eva Zeisel

Eva Zeisel is a designer recognized internationally for her creative work and design ideology. Born in Budapest as Eva A. Striker, Zeisel began her long career while residing in Hungary. After dropping out of school, she apprenticed with a local potter tiling ovens. She moved to Germany and worked in an art pottery for a short time and then designed theater sets. In 1928 she took her first job as an Industrial Designer for Schramberg, working on functional pottery and exhibition displays. She created over 200 geometric designs in colorfully glazed earthenware. (Young)

Her career continued in Berlin, the Ukraine, and in 1932 she began working at the Imperial Porcelain factory in St. Petersburg. She was falsely convicted in 1936 for an attempt on Stalin's life and was held prisoner for 16 months. Suddenly released from months of solitary confinement, she spent only a short time in Austria before Hitler's invasion. She settled in England until she married Hans Zeisel and they moved to New York. (Young)

In Manhattan she worked for the Bay Ridge Specialty Company and taught ceramic design in the Industrial Design Department of Pratt. In the early 1940's Eva produced a solo show for the Museum of Modern Art in New York with the help of Castleton China. Soon to follow was a popular set named *Town and Country*, made by Red Wing in Minnesota. (Young) It is known for its playful and colorful shapes that could be considered surrealist in style. The zoomorphic forms hug together, expressing nature, curves and togetherness.

Hall China produced *Tomorrow's Classic and Century*, with the latter currently in production by Crate and Barrel. She traveled for work in the 50's and 60's designing for the glass industry, porcelain companies such as Rosenthal and even using her signature style to create a store front for Original Leather Clothing. (Young) In 1983 she returned to Hungary for the first time in years and designed for the Zsolnoy factory. Her bulbous and altered forms a visual treat in the iridescent glazes unique to the factory. Zeisel is over 100 now in 2006, is still producing work fresh for the 21st century.

Zeisel's work is personally inspiring for its expression. She asked her students to explore the meanings of "growing, cozy, melting, slim, crisp" in their work as a new way of evaluating form and successfully navigated mood and functionality in her own work. She found beauty in spontaneity and variety, shadows and reflections, surface and structure, living beings and love. (Zeisel)

"To create things to be used, to be loved, to be with, to give as a gift, to fit into a normal day, to be proud of, is to create the culture of life that surrounds us."

Eva Zeisel, *On Design*

2 Century, 1950's



20th Century Design: Russel Wright

Russel Wright was truly an American designer. He was Ohio born with lineage back to the signatories of the Declaration of Independence. Wright was raised Quaker and in a family of strong social advocates, both qualities shaping his sense of design and functionality. Wright began his career creating theater sets with Norman BelGeddes and was a contemporary to early industrial designers Raymond Loewy and Henry Dreyfuss in the 1930's movement for the revival of the economy through design. Russel married Mary Small Einstein, who became a great supporter of Wright's work. She created much of the marketing material for Wright's designs and was the co-conciever of *Guide to Easier Living*. (Hennessy)

Wright's early tableware was produced in pewter, chrome, and spun aluminum often mixed with wood. He exhibited at early furnishing shows trying to satisfy the informal taste of the time. His focus was on bringing drama to the dining room for the middle class. In 1935 Wright designed Ocean, organic wooden dishes showing the beginning of his interest in the surrealist movement. Wright's other work includes furniture, small appliances such as a radio for Wurlitzer and an exhibit for the New York World's Fair. (Albrecht)

This early work was accompanied by Russel and Mary's advocacy for the United Way, an organization with three goals for economic recovery in the United States: mass production of original designs by known and unknown designers, creation of a national distribution network for the merchandise and coordination of promotional campaigns. Much of Wright's own success follows this model, even though the United Way achieved only moderate success. (Albrecht)

Wright continued his use of organic forms in the American Modern tableware set released in 1939 by Steubenville Pottery in Ohio. The popular American Modern was known for being able to go from the oven to the table, serving pieces with multiple functions and the thematic presentations of color on the table. The advent of open stock marketing allowed for mixing and matching at the point of purchase. Mary was critical to the successful branding of Wright's products to the market. Irving Richard, a long time business partner, encouraged Wright to focus on mass production for the middle class and he helped to manage the manufacturing and distribution of Wright's products. (Hennessy)

Wright continued to design dinnerware in the 40's and 50's with a casual plastic set for General Electric. The Iroquois China Company produced a high fire casual china set and Harker China

Company of East Liverpool produced White Clover Line known for its engobe patterns. While traveling with this work, Mary and Russel were able to begin their study of suburban life that would lead to the publishing of their lifestyle manifesto, *Guide to Easier Living*. (Hennessy)

Wright's work is personally inspiring because of his attention to the environment in which we live our lives. By considering living and eating habits, Wright tried to better the daily lives of Americans through the design of space, activities and objects.

“In this increasingly mechanized civilization, our homes are the one remaining place for personal expression, the place where we could really be ourselves.”

Mary and Russel Wright's Guide To Easier Living

3 Ocean Tray, 1935



20th Century Design: Tapio Wirkkala

Tapio Wirkkala is a Finnish designer who successfully worked with wood, metal, glass and ceramics. Born in 1915, he was raised by artistic parents and studied in Helsinki. Finland was mostly rural at the time and the people of the countryside developed art for practical purposes. When in the military, Tapio entered a knife he had made out of antler and other materials into a competition among soldiers. It was a common practice in Finnish society, soldiers included, for people to be encouraged to study handicrafts to fill their time. Having a hands on experience and craftsmanship were important to Tapio throughout his career. (Periainen)

Tapio was known for his graphic design and typography skills; he designed advertisements, stamps to commemorate the Olympics and, in 1946, the Bank of Finland asked him to design bank notes. That same year he won an Iittala Glassworks competition with Kaj Franck. He worked in the glass factory to learn the manufacturing process in hopes of becoming a better designer by fully understanding the material. (Periainen)

Although he did not work as a theater set designer like many American industrial designers, he did design exhibitions. He created a display for a Zurich show that was the first example of internationalism, inspired by his travels abroad to France. Wirkkala came to New York and designed flatware with Raymond Loewy, who piqued his interest in car design. Tapio's relationship with Rosenthal, the German porcelain manufacturer, began in the early 50's with a pattern called Finlandia. At Rosenthal he worked in black and white porcelain. The white porcelain was so thin in section it was translucent. (Periainen)

Wirkkala is known for using a similar visual language that could span production in a variety of materials. He lists his recurring themes as leaves, bubbles, spirals, birds, movement, material, geometry, texture and form. Tapio was also known to be an encouraging professor, who set up competitions and invited manufacturers to guest lecture about current issues and techniques. (Periainen)

Tapio Wirkkala is personally inspiring for his elegant and graceful forms, as well as his attention to material and craftsmanship. He celebrated the beauty of each individual piece and still created a cohesive body of work in wood, metal and clay. By pushing the limits of his materials for intensive study, he was able to find a fresh and unique aesthetics.

“The artist gets his fulfillment in the shape he has achieved and in overcoming the technical problems involved.”

Tapio Wirkkala

4 Wooden Platter, 1951



Manufacturing: Current Trends in Dinnerware

Today's dinnerware market is dominated by only a few companies, Mikasa, Lennox, Noritake, Wedgwood Waterford and Royal Dalton, but there are still many more companies producing work. I attended a tableware buyers market to observe the large range of current work.

The Tabletop Show is held in the Merchandise Mart at 41 Madison Avenue in Manhattan. With 24 floors of tableware showrooms, the exhibition is a comprehensive display of the American market. The Tabletop Show is primarily a venue for buyers placing orders with manufacturers and distributors for the next season. The tabletop market includes ceramic, wood, metal and plastic tableware.

Each display showroom is supported by sales, marketing and design team members. Each sales team is armed with small catalogs and brochures identifying all of the work available to retail buyers. The displays are carefully arranged to exhibit the work individually and in situ. It is not uncommon to find a fully set table, a kitchenette filled with dishes, or a cabinet that one might have in the dining room. These displays clearly indicate the trend research that drives the work and represent the houseware and lifestyle choices that interest the manufacturers' target markets.

It is important to understand not only the retail component of dinnerware, but also the production component. To ensure the viability of my design I have completed three on-site evaluations of manufacturing facilities to identify modern design and production methods for dinnerware. Emerson Creek Pottery, Homer Laughlin China Company and World Kitchen's Corelle Pressware Plant all produce casual tableware in the United States.

After visiting the three manufacturing facilities, I have determined that the Galaxy Collection can be produced in porcelain. Porcelain is a high fire white ceramic material that vitrifies to a translucent ware at 2375 degrees F. (Hamer) Three ways exist to make the Galaxy Collection: slip casting, press molding and jiggering.

Slip casting is appropriate for hollow ware such as cups, mugs, and pitchers. Slip casting is a better choice than jiggering for items that have multiple axis of rotation and inset feet that require a three piece mold. Slip casting uses liquid clay in a plaster mold to make a thin bodied pot. The original form in the dinnerware industry is traditionally made out of plaster, but also can be clay, wood or plastic. This form is cast in plaster to make a negative mold of the shape. When the mold is filled with the liquid slip it collects on the surface of the plaster as it dries. After a brief period, the liquid slip inside the mold is poured out and a shell of clay is left to stiffen inside the mold.

Press molding is appropriate for plates and bowls in the Galaxy Collection. Press molding uses a two piece mold to compress stiff clay into a flat or gently curved form. Press molding allows for slight variations in section, giving both the top and bottom subtle differences in contour.

Jiggering is an option for the Galaxy Collection in small production runs. Using a traditional electric wheel, clay could be centered and then thrown into a template for the body of the bowl or plate. The surface of the wheel head could then have an attachment that set the surface at a 3, 5 or 8 degree angle. The thrown clay piece could then be reattached to the wheel head and trimmed at an angle. Using another throwing template, the rim could be laid open at the cut angle.

The length of time that any design would be produced is proportional to the success of the product. The investment in each piece includes design time, model making efforts and tooling for production. Each plaster mold may last about 50 production runs before it deteriorates in quality.

Manufacturing: Emerson Creek Pottery

On a tour guided by Buck Adams, a long time employee, I saw the production and distribution process of this small, rural facility. The approaching drive revealed a small house converted into a retail shop with a conglomeration of wooden and metal buildings behind it that contained production facilities, offices and inventory storage.

The tour started with the clay mixing facilities in a rustic building where all the raw materials were stored in an open shed. The clay body is a white stoneware that is once fired to cone 4 and mixed to both a liquid slip and a stiff plastic clay. The liquid slip is mixed and moved in a large rolling storage tank to the casting room, and the plastic clay is mixed and moved to a pug mill close to the ram press. Once inside the casting room the liquid slip is screened and stored in large tanks. The clay is screened as it goes into the tanks and is tested for viscosity and specific gravity.

The casting room holds all of the molds that are currently being used. A long hose attached to a delivery gun allows the casters to move around the room, filling the molds as they go. After the slip has set up on the surface of the plaster, the remaining slip is poured into a rolling container and recycled into the large storage tanks. When the pieces inside the molds are stiff they are removed and placed on ware carts to be rolled into the cleaning and green glazing room. Cleaning along the seam lines is done by hand.

The stiff clay is used in a ram press to make plates and platters. The clay must first be put through a pug mill to even out the consistency and moisture content, as well as to be de-aired. The clay is cut into measured chunks for the appropriate size mold and finished piece. The hydraulic press is operated manually, with two buttons that have to be pushed simultaneously by the operator for safety. Special air channels have been cast into the plaster molds that allow for the piece to be literally blown out

of the mold just seconds after it has been formed. These plates and platters are carted into the same room as the slip ware to be cleaned and glazed. The part line on the rim of each piece is cleaned by an automated machine. Each plate is spun and a series of sponges runs over the edge until it is smooth.

When cleaned, the slip cast ware and the pressware are ready to be glazed. The glazes are sprayed onto the pots in layers. An automated machine rotates multiple pieces at a time through the spraying area and each piece turns by itself to ensure an even coat. The rate at which the pieces rotate and turn is controlled by the operator. The glaze is fed out of a storage tank in multiple spray nozzles aimed high, low and at the mid point of the pots. Only large platters are dipped in buckets of glaze, as they would be unsteady on the automated machine. Glaze is cleaned off the bottom of each piece by holding the pot on a large rotating sheet of wet sponge material.

After being sprayed with a base glaze each piece is hand painted. Emerson Creek has a variety of motifs individually painted with natural hair bamboo brushes. The forms of pottery have been designed by one of the owning partners, and the painted motifs have been designed by the other partner. It is the combination of these forms and hand painting that defines the signature features of Emerson Creek Pottery.

When the decoration is complete the pots are moved from the decorating room into the large shell building that houses the kiln, stocked inventory and shipping station. The kiln is gas fired and can hold three large rolling shelf units. It is computer controlled for consistency and is fired multiple times a week. When removed from the kiln, the pots are checked for flaws and are separated by style for storage. Emerson Creek sells pots through its retail shop, on the web and through other retail locations.

5 Slip Casting Room



6 Spraying Glaze



7 Hand Painting Decoration



Manufacturing: Homer Laughlin China Company

Homer Laughlin's team of designers, led by Ed Wonder, hosted me in their design and art departments, model shop, ceramic engineering department and institutional china production facility. The Design Department is responsible for the creative direction of forms and surface decoration, with much of their work determined by gaps in the market and retail demand. The Art Department handles the large quantity of custom surface designs for their institutional china customers, consisting of hotels, restaurants, country clubs, etc.

The model shop is where all prototypes are created. All pieces in the round are modeled out of plaster. Any attachments to those pieces, such as handles, are also modeled out of plaster. Pieces out of round, such as oval or angular platters, would be modeled with a CAD program and milled out of urethane by a contractor. The close contact between the model shop and the design department allows for the prototypes to be altered if design changes are necessary. The model shop also creates the master positive of the form used by the mold making shop to produce all the molds for the factory.

The production facility for Homer Laughlin's institutional china is a vast building. The tour began with the clay, both liquid slip and plastic clay, being delivered to the facility through pipes and large containers. The plastic clay is used to make flatware, such as plates, in a ram press. It also is used in automatic jiggers for hollow ware such as cups and bowls. When greenware is removed from the machine line it is cleaned and transported to different stations, possibly to receive a handle or surface decoration. Even with automated systems there is still some amount of hand work required in ceramics. The liquid slip is used in a traditional slip casting method for Homer Laughlin's more complicated forms. Slip casting has also been automated for some of the larger serving pieces. This machine literally squeezes the water out of the slip after the mold has been filled and put under extreme pressure. Within minutes the clay is stiff enough to be removed from the mold with suction cups and is released onto a conveyer belt.

The surface decoration is added by hand and by machine. Some work is hand painted with blocks of color. Pieces with solid stripes along the rim are done on an automated banding wheel, which is closely monitored by operators. The work is covered in a clear glaze with sprayers and "waterfalls" of glaze. The pots are run through large car kilns that keep the production floor warm, especially on a hot summer day. Since many of the institutional china customers require design motifs specific for their organization, Homer Laughlin operates a decal shop. The designs are water transferred to a glazed fired piece and are put in a kiln for a second firing. Some high end designs may be painted by hand with silver or gold and fired to a very low temperature.

The Ceramic Engineering Department controls the raw materials and determines the clay body and glazes based on the aesthetic requirements of each design. Operating in a laboratory, they test the formulas of all clays and glazes, as well as other physical properties of the work. Consistency of the product, durability and the aesthetics are evaluated. Homer Laughlin is known for its quality product as it stands up to the abuse of sustained use, restaurant dishwashers and the thermal shock of being room temperature when quickly placed in hot ovens and under heat lamps.

Manufacturing: Corelle by World Kitchen Inc.

I spent two days at the Corelle Pressware plant in Corning, New York. The first day was spent immersed in the Design Department, where they were actively getting ready for a Design Review that afternoon. The morning began with their weekly department meeting in a room posted with design trend boards. Each person claimed their tasks and offered suggestions to others. The jobs included working on new design motifs, applying decals to model pieces, finding and recording trend data and marketing details for an upcoming presentation and constructing a display booth for a trade show.

The Design Review was to approve new ideas for 2007. The attendees included some of the design staff, production managers, marketing staff, as well as World Kitchen Inc. creative directors. Each design was talked about for its success as an aesthetic object, as well as for its ability to be produced as it looked in model form. Some of the choices were dismissed because of conceptual reasons and some brought production challenges. The quality of work depends on the ability to consistently produce surface decoration, making it important to note which colors may not have the saturation represented by the decal because of the automated screen printing process.

The tour of the production facility was given by a glass chemist. He is responsible for formulating the glass from raw materials and glass recycled from the manufacturing process. The raw materials arrive in box cars and are transferred to large storage tanks, easily viewed from a birds eye tower accessible by a vertical human conveyor belt. The glass formula is monitored through its molecular composition as the raw materials have variations from batch to batch.

There are two types of glass used to make Corelle dishes. When laminated together they form a durable ware with great tensile strength. The glass is melted in large vats using electrodes. The molten glass exits the bottom of the heating tanks in large, glowing ribbons. The three layers of glass lay together over molds and the laminate is vacuum formed into the mold cavity, the rim is stamped around the edges to cut it from the ribbon of glass. The molds are metal coated with a gold alloy and are attached together on a large spinning wheel that easily catches the stream of hot glass. As the pieces flip out of the mold, any excess glass is collected and saved to be remelted. Each tableware piece that comes out of the mold is fire polished to soften the sharp edge.

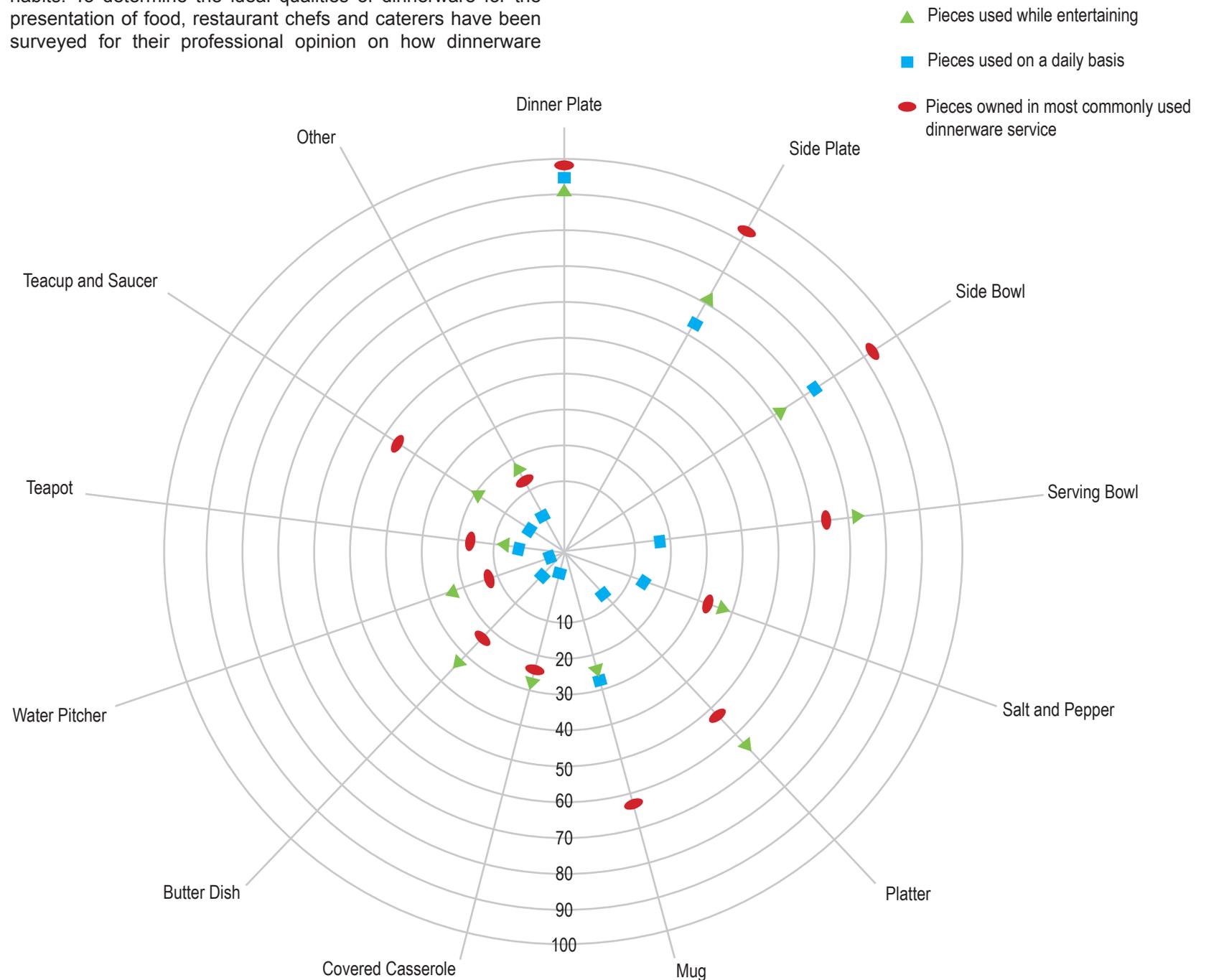
A maze of conveyor belts runs the pieces through quality control and packing for storage until they are ready to be decorated. The surface decoration is an automated process which allows pieces to run against wheels banding colors along the rims, as well as employing large screen printing machines that apply enamels to the surface. All of the work is annealed to relieve the stress in the glass, as well as to fuse any surface decoration into the body of the piece, making it scratch resistant.

Dinnerware Survey Results

The only research data publicly available for the kinds of dinnerware being used in the home are market shares purchased by different demographics (age, income, occupation, family status, etc.). An online survey has been used to identify the use patterns of a diverse user group and their buying factors for dinnerware. The aim in surveying individuals was to determine the most commonly used dinnerware components and their function, as well as behavioral patterns that influence dining habits. To determine the ideal qualities of dinnerware for the presentation of food, restaurant chefs and caterers have been surveyed for their professional opinion on how dinnerware

contributes to an exceptional dining experience. By comparing what is specifically used in the home to an ideal dinner service set, the potential for an industrial designer is to improve the users' dining experiences through dinnerware that contributes to the presentation of food and conveys the desired atmosphere for a meal or event.

8 Percentage of use for individual dinnerware pieces.



Dinnerware Survey Results

Results from the survey indicate that the dinner plate, side plate, and side bowl are the most commonly used on a daily basis. The most important decisions about the aesthetic qualities that would resonate throughout the Galaxy Collection were made focusing on those three pieces. Drinking vessels were owned by 40% more people than those who actually use them daily. Although not more important on a daily basis, serving bowls and platters are used more often than drinking vessels while entertaining.

Industrial ceramics are used by 75% of the people surveyed as their everyday dinnerware. The use of materials diversifies in the accent pieces used in conjunction with the everyday dinnerware. The most common accent pieces used are serving bowls and platters, with the next being salt and pepper shakers and covered casseroles. Results confirm that people break their daily routines when setting the table for guests.

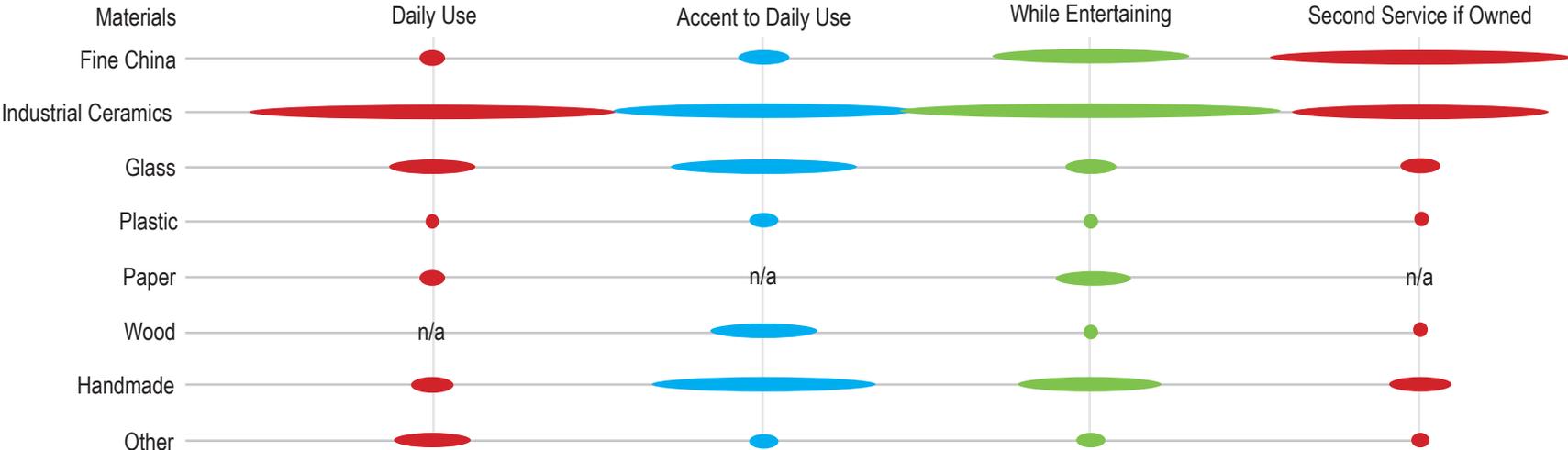
When choosing dinnerware people were interested in more than one aesthetic or tactile quality. Color is the biggest influence on the purchase of dinnerware, as well as the pattern for surface decoration. Most people choose dinnerware with a pattern around the rim, but both all white and dinnerware with full face of surface decoration have each been bought by one quarter of the people surveyed. Shape, size and material are not as influential for people purchasing in their home, but all of those qualities were important to the food service professionals surveyed.

The people surveyed commonly cook and eat at home 5 nights a week, with the other two nights eating out or bringing home prepared food. They most often eat American style foods 3 or 4 nights a week. Asian, Italian and Mexican are the most common food to be eaten once or twice a week. When asked if special serving dishes were required for any food types at home, those who responded yes often included sushi dishes or pasta bowls in their list.

Based on the most commonly eaten types of food, I chose to interview food service professionals from an American diner, a Latino influenced restaurant, an Italian restaurant, an Asian restaurant, and a caterer who prepares food in many different styles. The American diner is the only restaurant that uses all white dinnerware. White is a good background color because it does not compete with the color or texture of the food. However, the plain plates do not express the same liveliness as found in the atmosphere of the establishment.

Character was the first observation made in the Latino restaurant. For a style of food that is often rich in color and texture, the brightly colored plates are a great addition to the table. This particular establishment is known for its mix and match dishes, and return customers are known to remember and discuss the plates they have used when they see them again. There is a sense of engagement for the dinner guest who becomes an active participant in the environment of the meal.

9 Percentage of Usage for a Specific Material



Dinnerware Survey Results

The Italian restaurant serves mostly from white dishes, but noted that black dishes have been incorporated into the service for meals that have sauces highlighted by the dark background. The owner described that the more important quality than color to an Italian dish was the cultural tradition of presenting a bountiful amount of food.

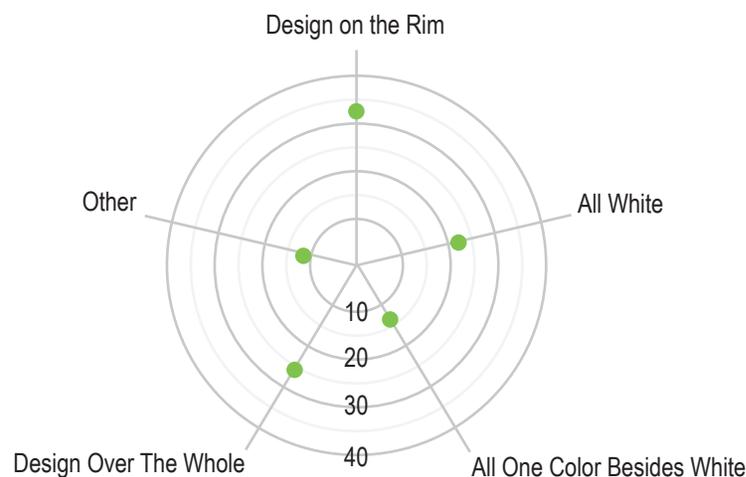
The Asian restaurant has a large variety of dinner service pieces, including the typical white plate, but also those more specific in shape and ethnic decoration for sushi, sake, soup and dipping sauces. Trying to maintain an authentic atmosphere in the restaurant is the determining factor for the style of dinnerware. This is the only restaurant reviewed that used materials other than ceramics for their dinnerware.

The Caterer interviewed runs a business that offers cooking services to people in their homes, both small family style meals and large dinner parties. Most of the dinnerware used is owned by the host or is rented. The caterer is responsible for providing the serving pieces necessary for the dinner. When asked how important dinnerware is to the success of a catered meal the response was that it is second to the quality of the food. The clients using this particular caterer often have lifestyles that expose them to world class restaurants. The guests often have memories of very fine meals where every detail of presentation was attended to, and the catered event should be no exception.

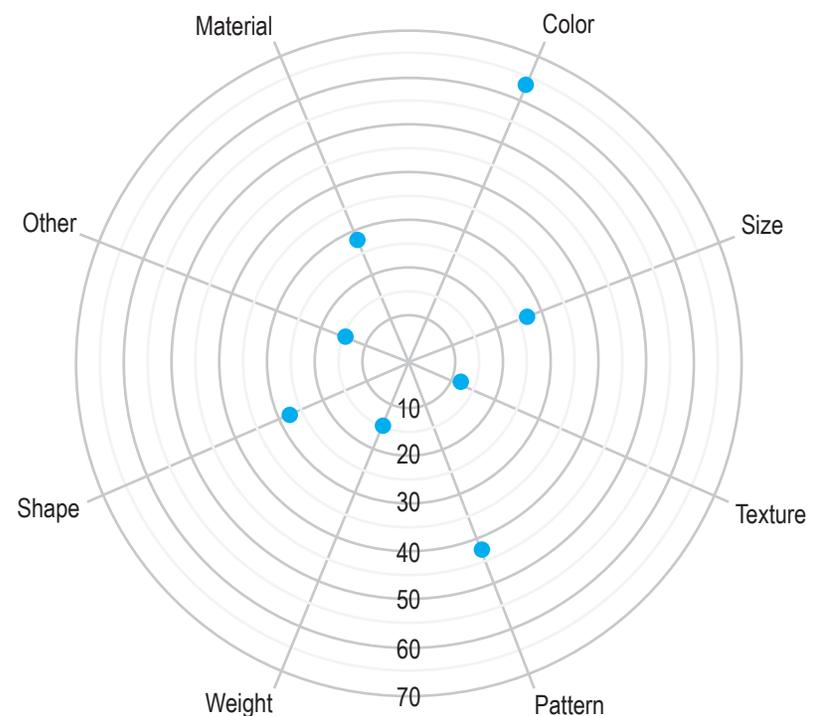
Each restaurant commented on the form of their dinnerware. The American diner addressed the issue that different shapes besides round were missing from their collection and would make a nice addition to the service options. The Latino restaurant noted that an oval shaped plate was their most common non-round form, they used it because of how it frames a small row of enchiladas with beans and rice balancing on each side of the plate. The Italian restaurant did not use unusual shapes, but does distinguish between scales of bowls for its differing lunch and dinner service. The caterer described that using unusual shapes such as oval and rectangles allow for presenting small appetizers in long rows or other special arrangements.

The Asian restaurant had many different shapes associated with its sushi bar, but mostly commented on the difference between dinner plates. The manager compared the rectangular plates they were using to oval plates being used by the same style restaurant in a different location. He was concerned that they had opened this new location with the larger rectangular plates. He has been noticing more people taking home food because with the larger plates the cooks put more food on to make it look full. It was definitely a monetary concern that could not be solved by simply switching plates for fear that the customer would have the impression of down sizing in proportions.

10 Percentage of people who have a particular surface decoration.



11 Percentage of people who chose distinguishing features.

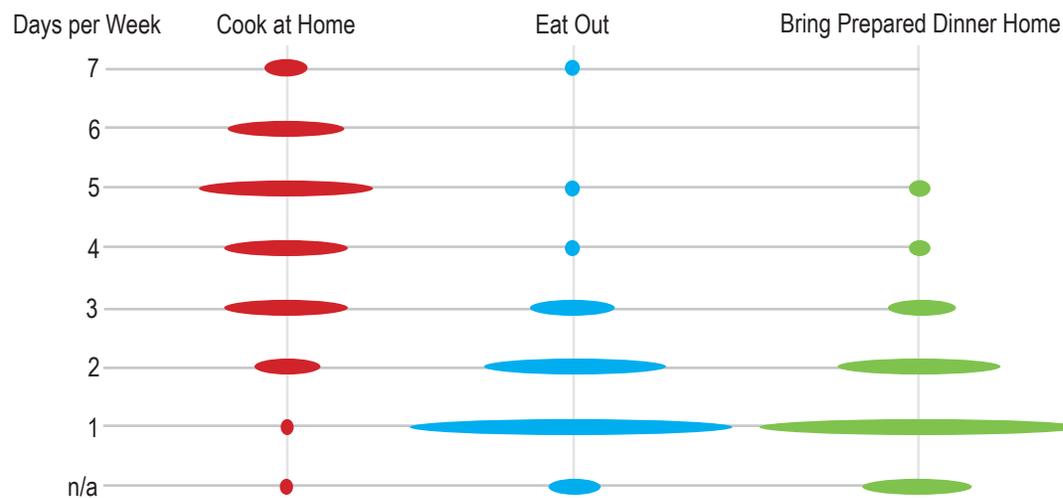


Dinnerware Survey Results

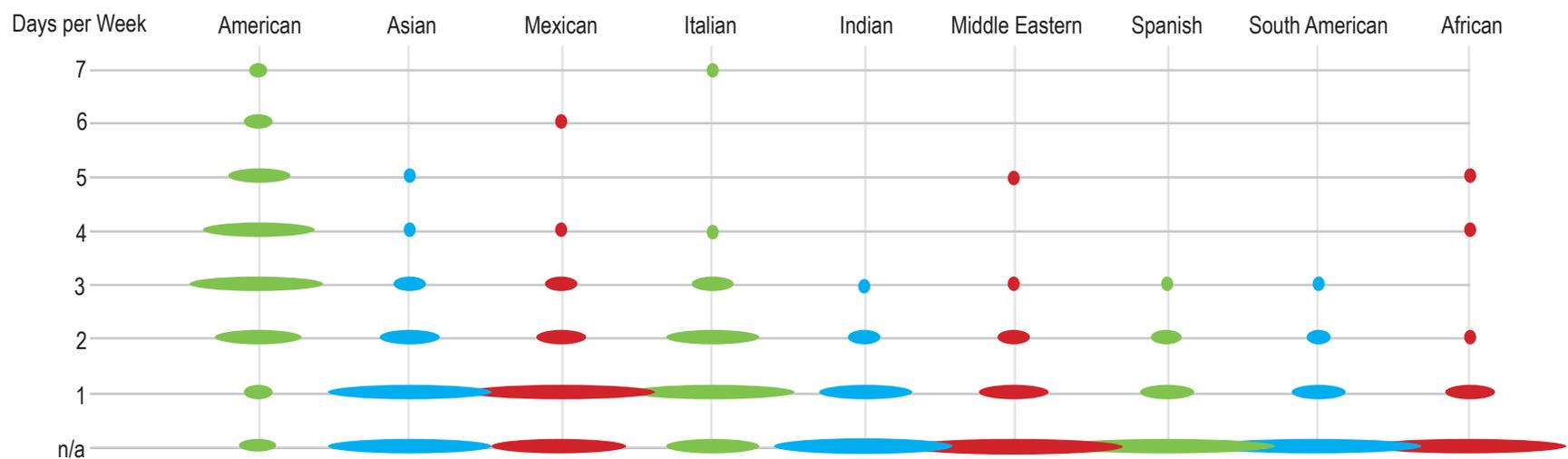
Functionally, the food service professionals listed their requirements to be durability, ease of handling for the wait staff, and stackability. Most dishes are lost to breakage by the wait staff, although some are damaged in the dishwasher. The restaurants also reported that the theft of small dishes and glassware is a reason for loss. Each establishment orders from institutional china catalogs or buys from discount retail locations as often as four times a year to replace stock.

Combining the results of the dinnerware survey and the opinions of the food service professionals I concluded that environment and presentation of food can enhance the dining experience of participants. Missing from traditional tableware are off round shapes that offer more possibilities for the organization of food in a dish. The balance of color and visual weight of food on a dish can stimulate the appetite for a simple meal as well as complicated dinner service. Colors and patterns on dishes can compliment food and relate to the surrounding environment. Variety and proportional relationships on the table, as well as in the food, feeds us in more ways than one.

12 Days per week people have different eating habits.



13 Days per week people eat different types of foods.



Design Process

The design process of the thesis began with a series of gestural drawings painted with India Ink. The first discussion about what would become the Galaxy Collection included the debate of what pieces were necessary for today's needs on the table. In recent history dinnerware sets include the basic plate and bowl for an individual and serving pieces for entertaining groups. Drinking and pouring vessels are common, as well as accessories like salt and pepper shakers or cream and sugar sets. Covered vessels such as casseroles or canisters are sometimes available, but not as often as serving pieces mentioned earlier.

The gesture drawings set the tone for line quality in the set. I looked to move forward with a dynamic and undulating quality to the profile of the vessel. Each step after these gesture drawings was a refinement on capturing beauty in the movement of the eye across a form.

14 Gestural Drawings in India Ink



Design Process: Typography Translated

The study of typography was incorporated into the thesis because the eye moves around a table in the same way that it moves across a page in path controlled by rhythmic variety and visual weight. Repetition and contrast in typography and page layout provide clarity in the union of individual parts. With visual order and hierarchy the viewer can fully appreciate the total expression offered by a page layout, or as I propose, a table setting.

Four major groupings of letter forms can be identified in the English alphabet. Uppercase and lower case letters are composed graphically of vertical strokes, curved strokes, vertical and curved strokes combined, and oblique strokes. Tailoring the design process to find these major characteristics can allow the designer to quickly translate from one letter to the next.

Each letter has specific characteristics and proportions that determine its form, including serifs, weight, width, posture, proportion and stress. One of the most identifiable features is Serifs, which are the short strokes that extend from the upper and lower ends of the major strokes. Weight is the ratio of height to stroke width, determining the boldness of the letters. Width is the ratio between back vertical strokes and the white spaces between

them, making the letters look expanded or condensed. Posture is the angle of the letter. The contrast of the letter is determined by the thinnest parts of the stroke versus the thickest parts. The x-height is determined literally by the height of the lower case "x." The letter seems tall when it is $\frac{2}{3}$ the height of the capitals and short when it is $\frac{1}{2}$ the height of the capitals. Ascenders and descenders describe the extensions beyond the x-height. Stress is the prominent visual axis that results from the relationship between the thick and thin strokes. (Carter)

The completed series of drinking vessels is based on the study of typography. The form of the vessels first can be classified into straight sided, angled profiles, and bulbous forms, some with the center of gravity high on the form and others with it low. In these groups, each individual form was altered on the surface, foot, rim or profile. Exchanging these variables provided a broad look at form potential for the set. The three ideas that were the most appealing included straight sided vessels with surface decoration, pots that were angled in profile and at the rim, and bulbous forms that had been altered with spiral indentations.

15 Wheel thrown vessels for volume study.

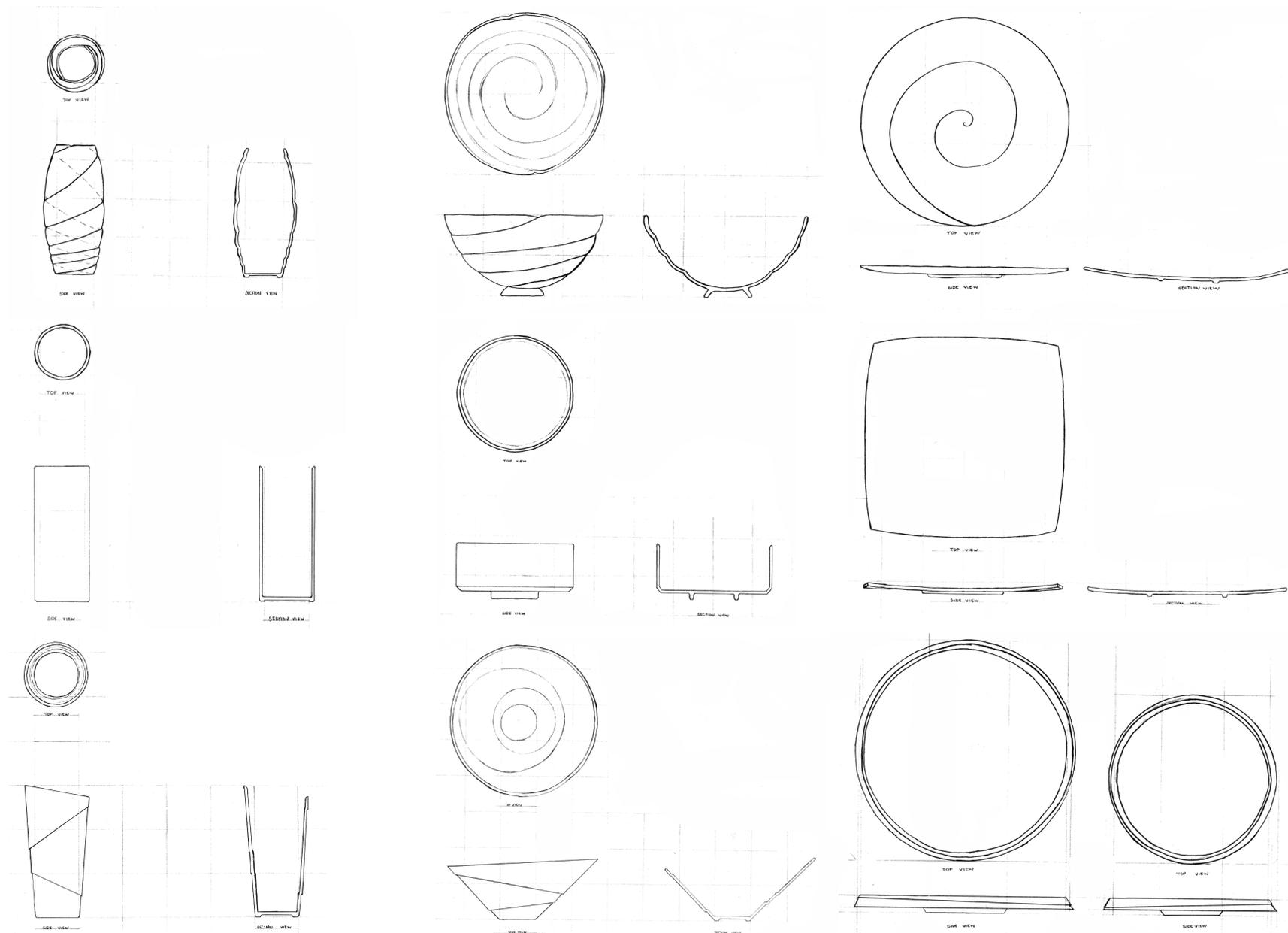


Design Process: Sketching Ideas

From the volume study, three ideas were carried to the next level of sketching. The first was to use the proportions of the golden section to create a spiral. This spiral would draw the form in to its center as it spun around pot. There would be a textural experience holding and using these pots as hands run over the bulged and cinched lines of the spiral. The second idea was to use the concept of formal reduction, similar to that of page layout. By starting with the simplest form, each piece can be loaded with complicated surface decoration and still be readable by the viewer because the form and decorative elements do not compete and are viewed as one.

The third idea generated from the volume study was to create a landscape on the table top. The user would also have a textural experience with this set as they grasp the seemingly layered form, but the visual effect on the profile created by the diagonal lines is the strongest design element. Together on a table, the sloping rims and breaks in the form look like mountains clustered on the horizon or a tightly packed text where one letter nearly overlaps with the next.

16 Conceptual Sketches



Design Process: Reading the Landscape

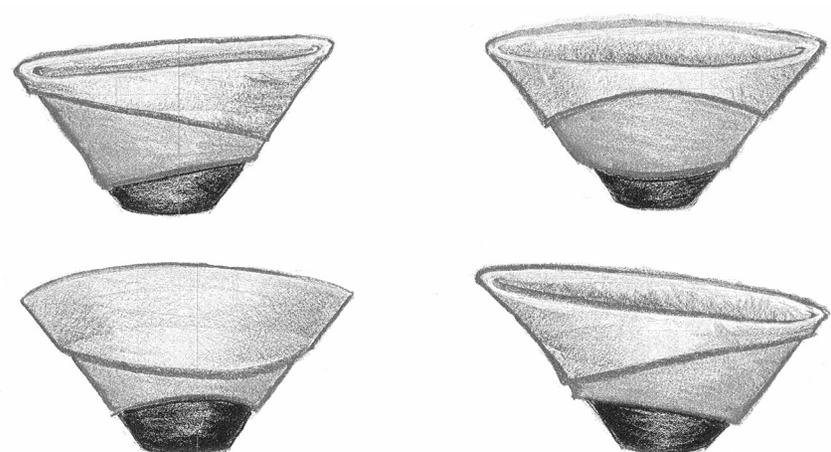
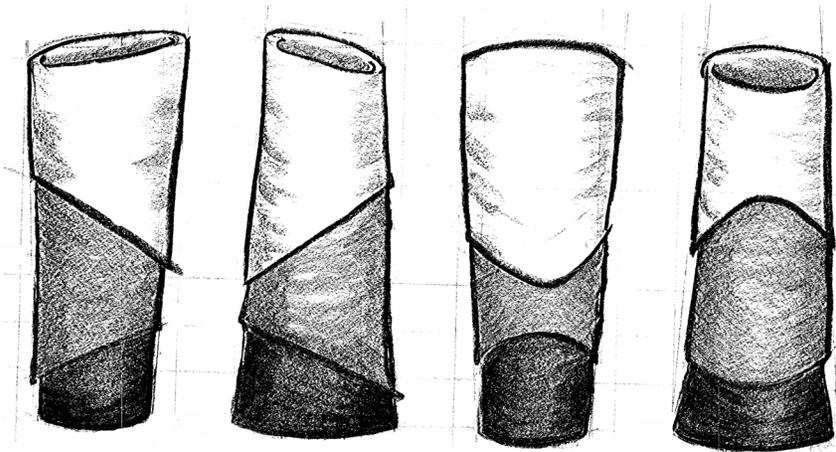
Architecture, like typography, moves through our field of vision. It can be a separate entity just added to the landscape or it can be integral to the natural world around, seamlessly moving from one layer to the next. Architecture is also closely related to pottery. Both pots and dwellings are meant to contain human basic needs. We live every day with them and our lives are influenced by their functionality and aesthetics.

The walls that weave across the Aran Islands in Ireland are an example of architecture blending into its environment. The small courtyards created by the maze of walls contain the precious soil composed from seaweed, sand and sheep manure. The ability to keep soil on the ground has made it possible for hu-

mans to sustain life on these wind blown islands. Aesthetically the walls terrace down the soft slopes in the same way that the island cliffs are exposed.

The form of the Galaxy Collection was greatly influenced by the idea of layers. Layers of information, texture and/or color could give depth to each piece. The pottery user would see variations in the horizon line of the table and “read” each differently depending on orientation.

17 Chalk drawings



18 Aran Islands, Ireland



Design Process: Distillation of Form

The translation from typography, or architecture, to the dinner table is in how design engages the viewer. "Typography needs to be read, seen, heard, felt, and experienced," says *Typographic Design: Form and Communication*. Similarly, dining is very experiential. The table is a place where people gather and the environment of that space influences the attitudes of the participants. Setting the table can create a tone or mood for the event and it is the individual parts working in unison that attract and hold our eye as we look across the table.

The academic study of industrial design for dinnerware has revealed a series of questions suitable for most any design problem: What is the context of use? What kind of mood is being

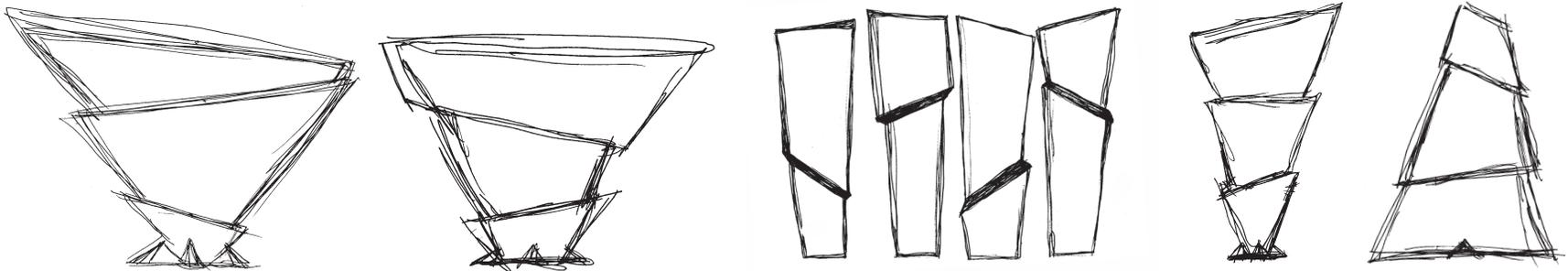
established? What hierarchy is given to each of the parts? Is there any rhythm to the scene? Is there harmony among all of the components? How effective is the design in a variety of situations?

The Galaxy Collection has been developed to accentuate its dynamic lines. The asymmetrical shift in the visual weight back and forth from form to form makes it playful and sophisticated. The diagonal segments lead the eye from one form to the next. The question as to how much of this design element was needed to create an elegant form was explored in sketches, computer modeling and paper models.

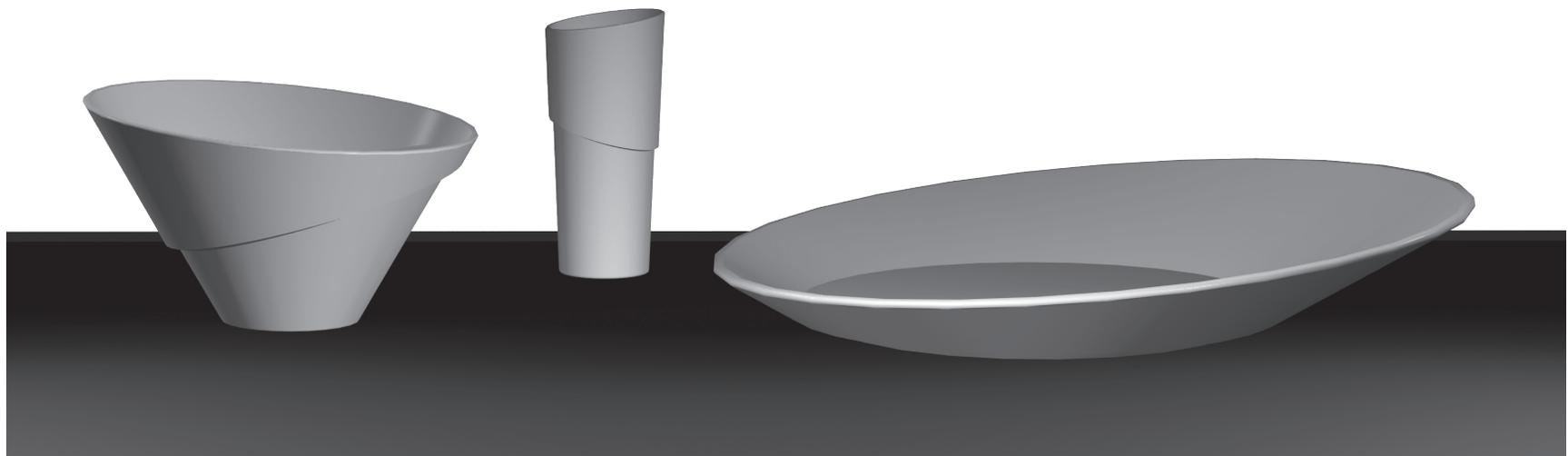
19 Typography

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

20 Sketches



21 Solid Works Models



Design Process: Paper Studies

Form iterations were rapidly prototyped in paper in order to arrive at a possible shape or scale decisions. The round paper models were conceived on the computer. The three dimensional forms were flattened in the program and printed to scale. Pulling the forms into shape from the flat pattern was the first physical interaction that we had with the set. The paper models also gave way to further study of the square suggested in sketches. Because of the way in which paper models are pulled into shape, the square seemed a natural step forward for the round models.

22 Paper Models



Design Process: Porcelain Place Settings

Early wheel thrown forms developed four possibilities for the set. It was clear from the paper models that there was no definition given to the foot or rim. Seeing the break in the silhouette from the original idea was disturbing visually compared to the clean profile on other forms. This was a critical step in the design process for determining the form of the Galaxy Collection. A wider rim was determined best for accenting the diagonal cut of the rim and giving the user a natural handle on the form.

23 Clay Model #1



24 Clay Model #2



25 Clay Model #3



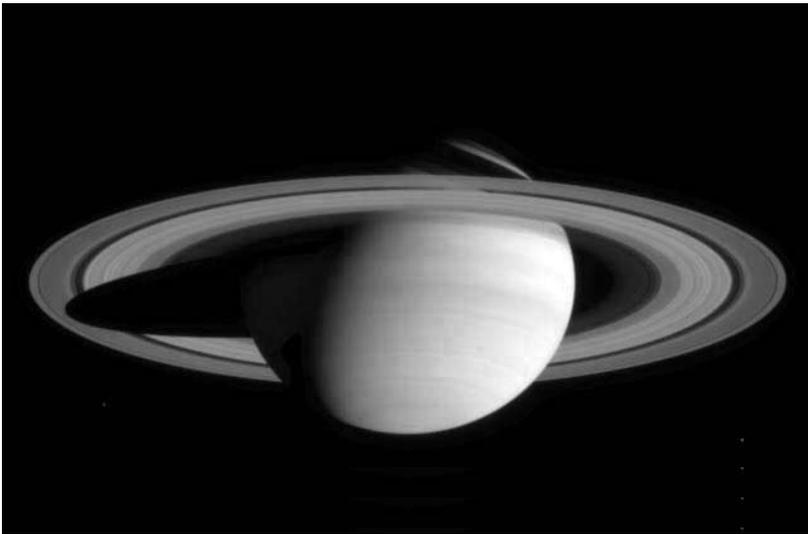
26 Clay Model #4



Design Process: Rings in the Round

The Saturn-like rings that form the undulating rims of this set are dynamic and are designed to frame food asymmetrically. The wide brim of the newly defined set clarified the form as simple, individual pieces as well as a cohesive whole. The flowing of one form into the next echoes the theory of hierarchy in typography as well as layers in nature and architecture.

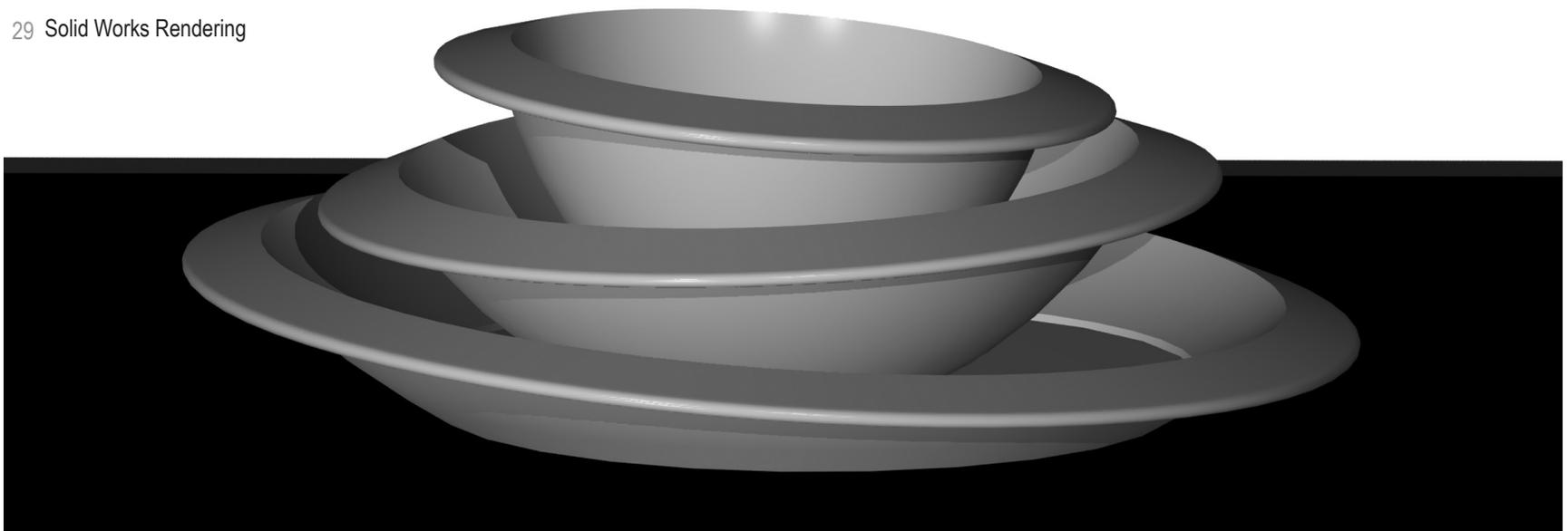
27 Saturn, courtesy NASA/JPL- Caltech



28 Clay Model #5



29 Solid Works Rendering



Design Process: Making the Plaster Plate

Using a jigger arm, a plaster model of the round plate is made. A solid block of plaster is poured onto the wheel head. Using a template attached to a jigger arm, plaster is removed from the solid block to make the hump for the core shape of the plate. More plaster is poured over the wheel head and a second template is used to scrape the plaster down to the thickness of the plate. Using a surface gauge to mark the angle, the bottom of the plate model is removed. The angled sides are then attached to a flat sheet of plaster and trimmed at the connection to complete the model.

30 Block of Wet Plaster



31 Using the Jigger Arm



32 Using the surface Gauge



33 Cutting Off the Bottom



Design Process: Plaster Plate

A plaster model of the dinner plate exhibits the line quality possible on both the top and the bottom of the form with the press molding technique. Plaster models are used in the industry to evaluate form. Scaled up to accommodate for shrinkage, plaster models can be used as the original positive for casting molds. The surface quality of plaster models can produce perfect molds, but plaster is still a fragile material prone to breaking after heavy use.

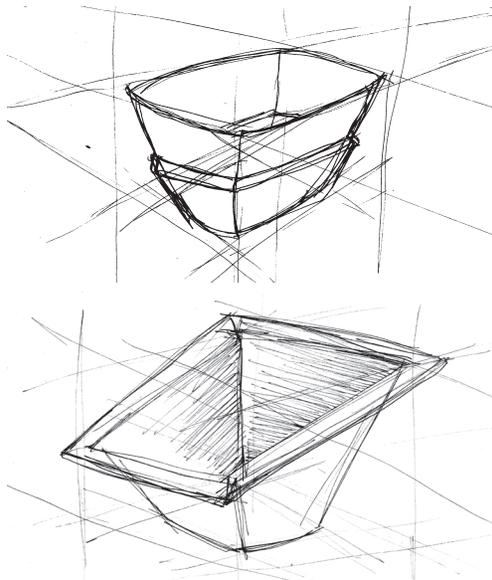
34 Plaster Plate



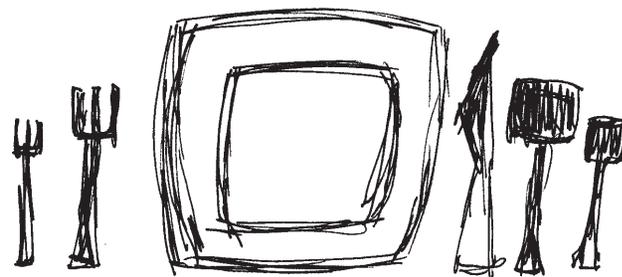
Design Process: Seeing Saturn in the Square

The diagonal nature of this dinnerware set accentuates the rounded square, each angle and corner playfully leading into the next. The square was deemed worth pursuing as a form after seeing its success in the paper models. The odd shape is influenced by international tastes. It is not uncommon to find square and rectangular plates and serving dishes in Asian meals. The influence of Asian food is evident in the survey, as people who used special serving dishes because of food type often were referring to special sushi dishes.

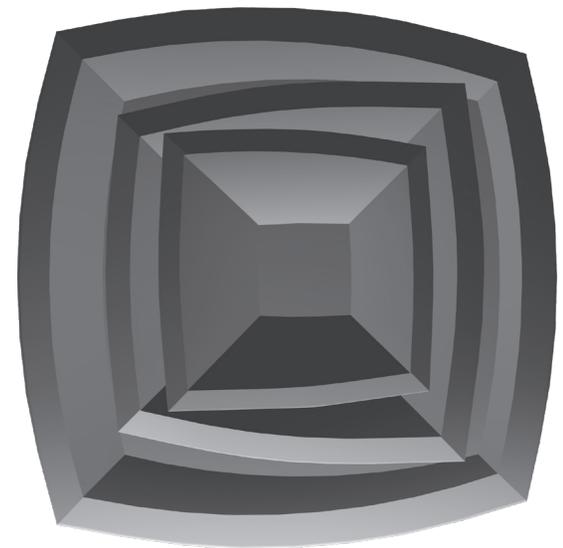
35 Sketches of bowls



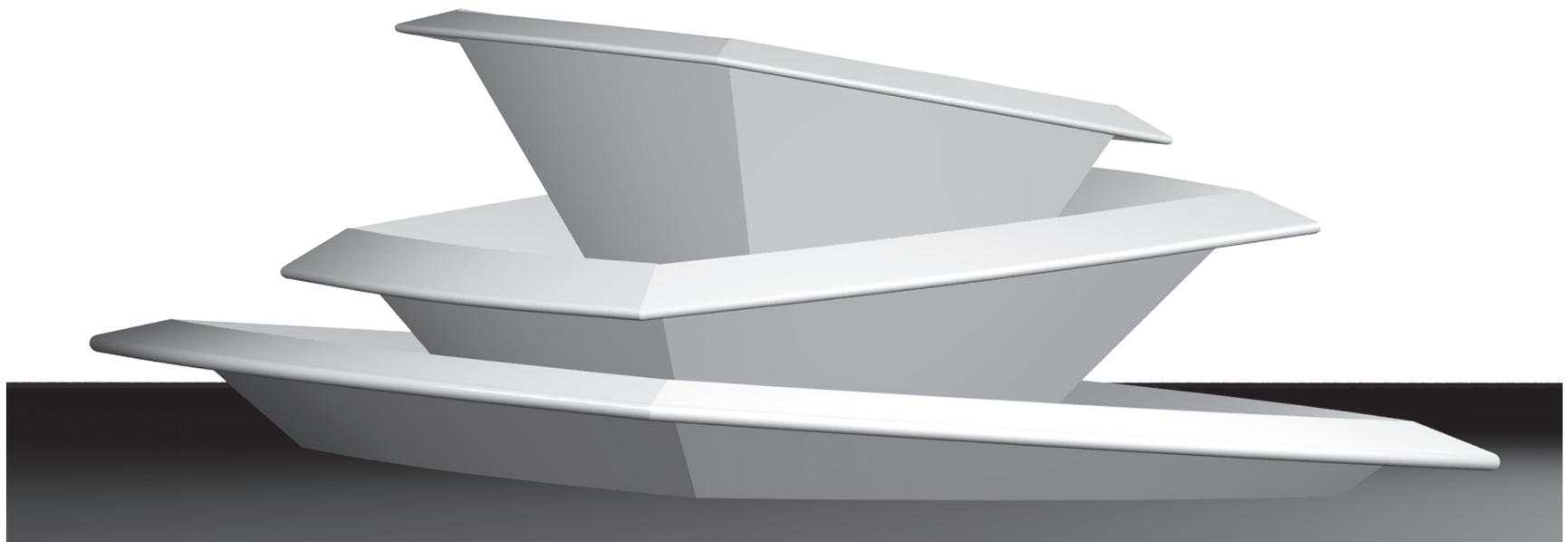
36 Sketches of a place setting



37 Top view of square set



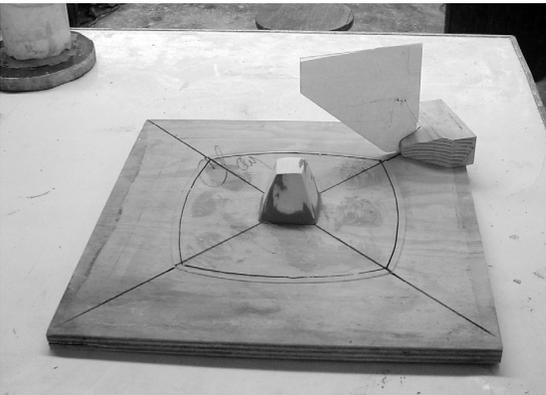
38 Side view of square set



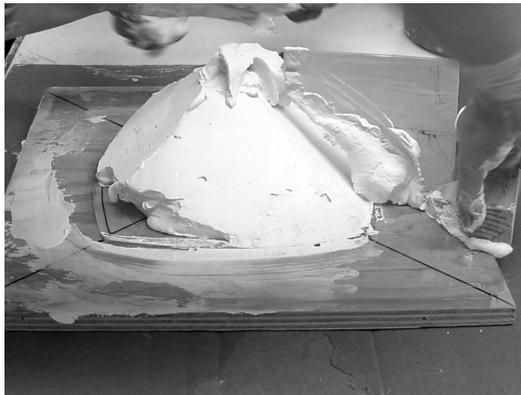
Design Process: Making the Plaster Bowl

The square model is made by sweeping a template around the outline of the model twice. The first pass making the form to create the inside negative space and the second pass to make a shell on that form that becomes the model. The base of the model is milled flat in between each stage. After the second pass and the shell is released from the core form, the edge of the model is marked at an angle with a surface gauge and trimmed with a rasp. A cavity is sculpted for pouring the rim as a separate piece. After the plaster is added, a template is swept along the form to create a signature rim for the set.

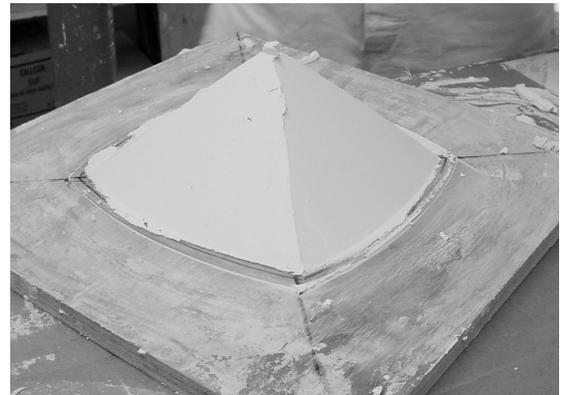
39 Template



40 Scraping Plaster



41 Plaster Pyramid



42 Using the Drill Press



43 Marking with a Surface Gauge



44 Rasping at an Angle



45 Pouring Rim



46 Scraping rim



47 Plaster Bowl on Rim Mold



Design Process: Plaster Bowl

A plaster model of a square bowl reveals the shadows cast by the planar surfaces. This was the first time the square set had fully been seen in model form. The success of this model opened the door for the rest of the set. It was clear from this point that both the round and square set could be successful together or apart. It also underscored the need for precise models to fully appreciate the set. This was the time in the design process that the basic place setting felt defined and that work on the accompanying pieces should start.

Plaster model making is a traditional process in the dinnerware industry, the amount of hand skills required to produce plaster models should not be over looked. I would equate making plaster models to the difficulty of learning how to throw ceramics by hand on the wheel. It could take years to master the skills.

48 Square plaster bowl



Design Process: Rapid Prototyping in Nylon

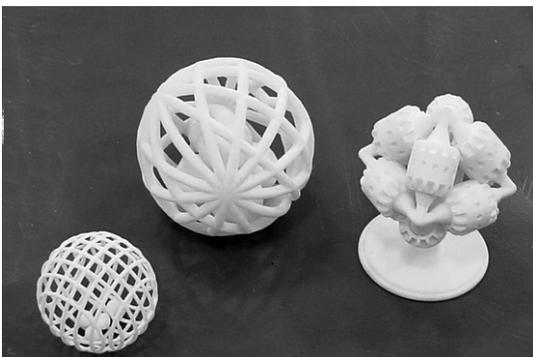
The Danville Community College runs a rapid prototyping machine funded partially by the state of Virginia. I used my computer drawings to create models of the Galaxy Collection at their facility. The machine models complicated parts with a laser that melts nylon in layers .004 of an inch thick.

The machine uses a roller to press out the thin layers of nylon into the printing chamber. After each pass of the roller, the printing chamber drops down and the next layer is added. The models are quite warm when finished and must cool down in the printing chamber before being removed. The print chamber

is pushed up after cooling and the entire mass is moved inside a plastic box. The loose powder is removed from around the models by hand and with a tooth brush. The models are also blown off inside a protective chamber with small beads and with a regular air compressor to remove particulate matter.

This type of model was used in the same way it would be in industry. It was a rapid way of evaluating formal issues before large amounts were invested in tooling of the products. It was great for visualization and the design process, but lacks the surface quality of plaster models for casting.

49 Sample Nylon Pieces



50 Prototyping Machine



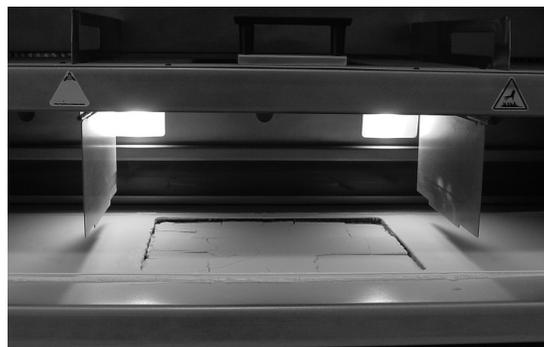
51 Laser Lens Cover



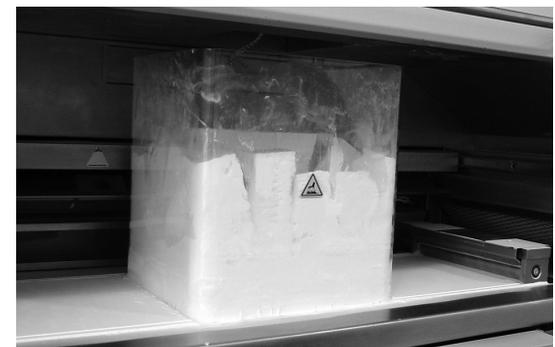
52 Roller for Nylon Powder



53 Build Bed Full



54 Build Bed Exiting Machine



55 Pieces Before Cleaning



56 Cleaning with a Toothbrush



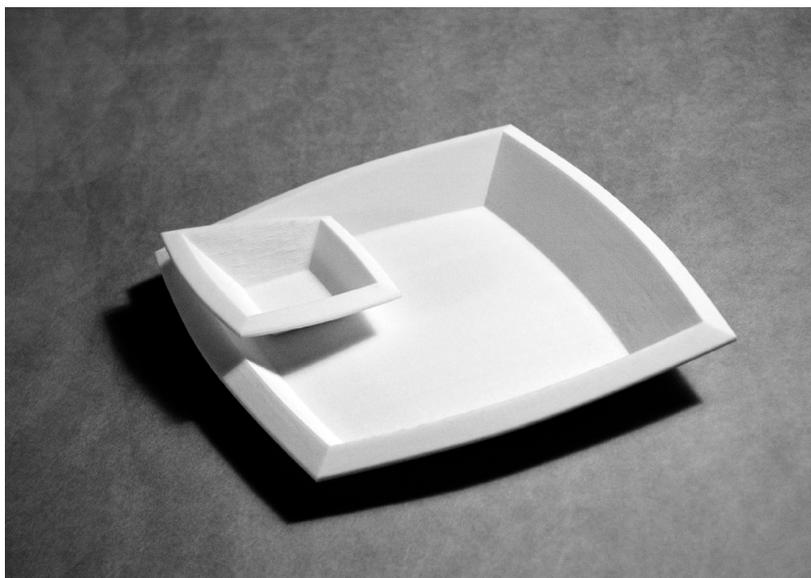
57 Air Chamber for Blowing Clean



Design Process: Nylon Models

Prototypes made in nylon confirm the success of 3 dimensional modeling on the computer. With dimensionally correct models, it was possible to evaluate scale, functionality and cohesion for the set.

58 Sushi Set



59 Drinking Vessels



60 Place Setting



61 Cup and Saucer



The Galaxy Collection

The Galaxy Collection is a dinner service ready for mass manufacture. The design is appropriate for modern tooling in production as porcelain dinnerware. However, the study of industrial design has brought a unique quality to the set. Pieces from the Collection can also be made out of metal, glass, and wood products because of the similar molding or turning techniques for each material. The dinnerware survey indicates that people often set the table with a variety of materials, colors and patterns, making for a more visually dynamic table. The complete Collection would create the same type of interesting table with *one*

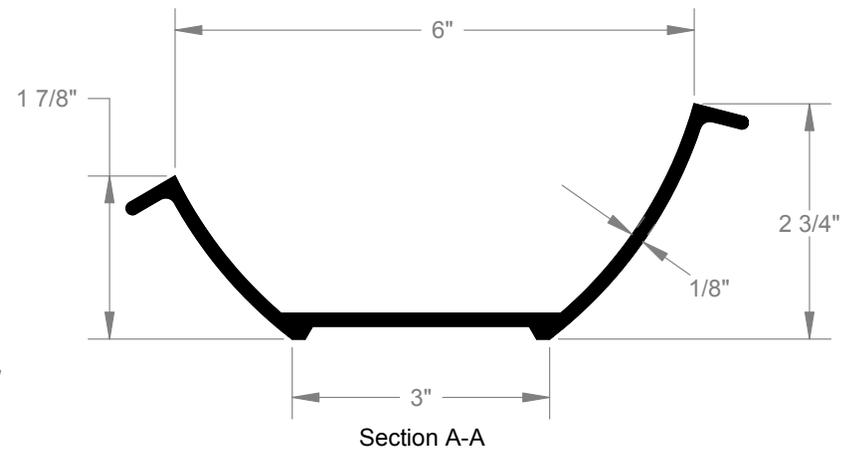
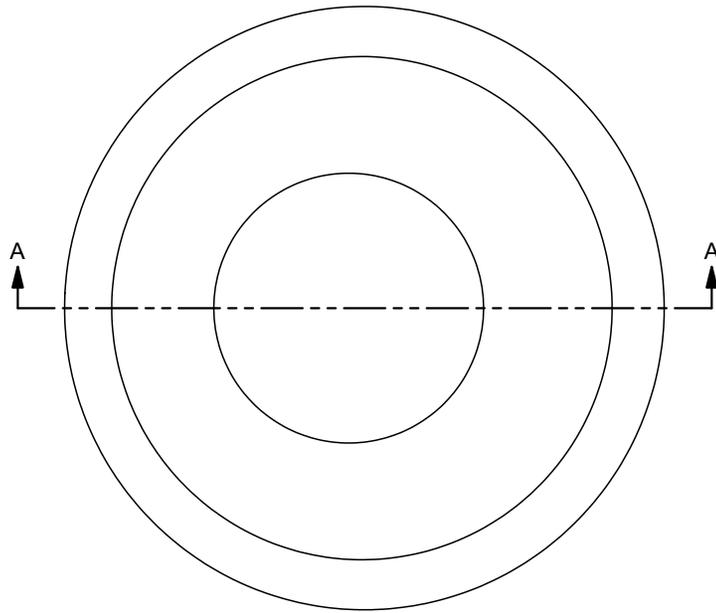
set of dishes. The Collection is meant for both daily use and entertaining and contains food in an offering position through its asymmetrical form. The high side of each piece can act as a handle, so it can be easily carried from the kitchen to any spot in the house to eat. The strong physical structure of the Galaxy Collection makes it comparable to the durability of casual ceramics on the market today. The unique manner in which each piece of the Collection tilts towards another adds a theatrical element to the table for the guests. Arranging the table as a part of preparing a meal sets the stage for a memorable event. Never assume that just any old plate will do.

62 The Basic Place Setting



The Galaxy Collection: Aura

63 Technical drawing of the side bowl.

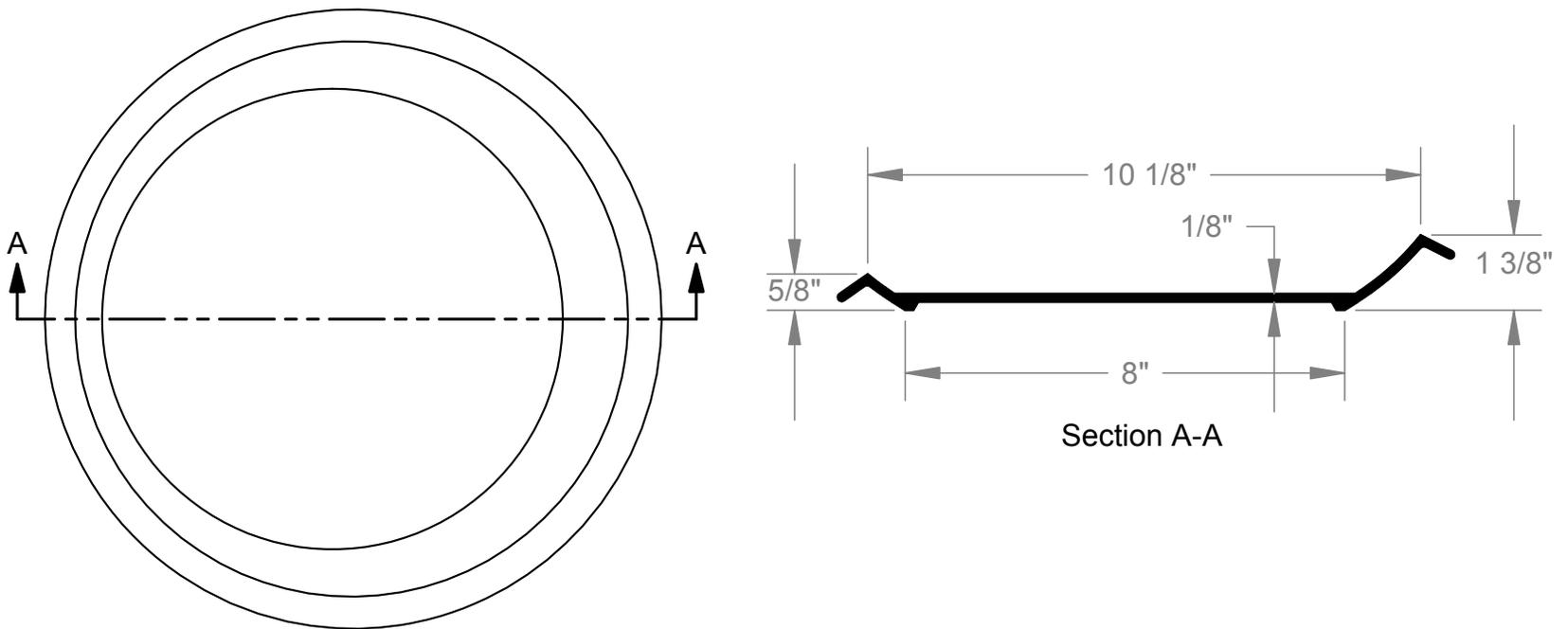


64 Nylon Side Bowl



The Galaxy Collection: Aura

65 Technical drawing of the dinner plate.



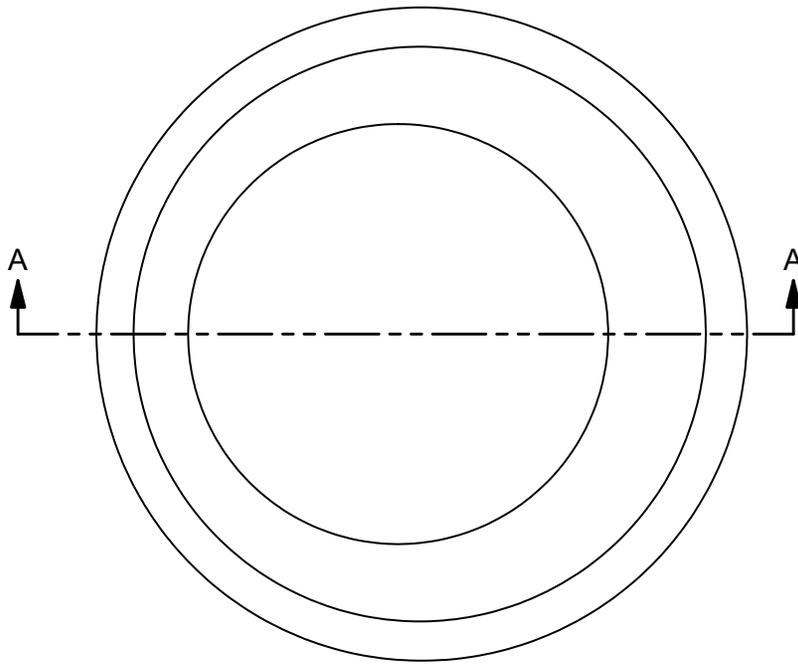
Top View

66 Nylon Dinner Plate

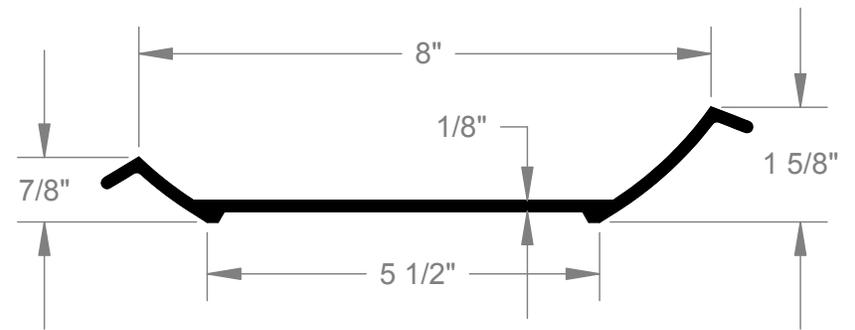


The Galaxy Collection: Aura

67 Technical drawing of the side plate.



Top View



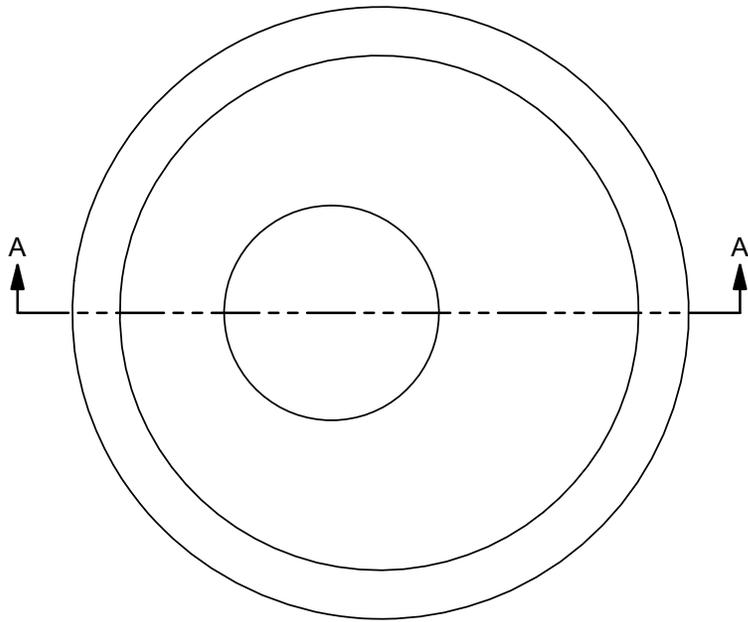
Section A-A

68 Nylon Side Plate

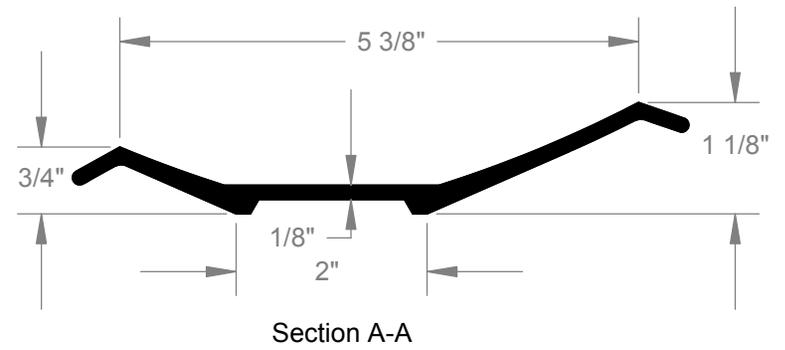


The Galaxy Collection: Aura

69 Technical drawing of the saucer.



Top View



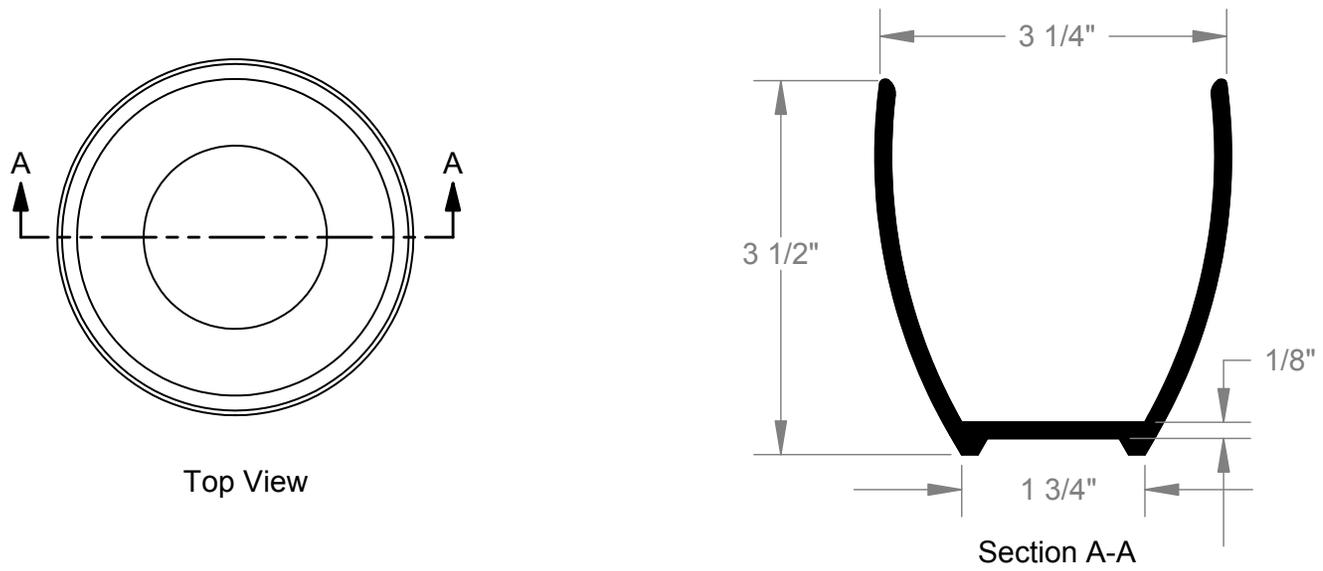
Section A-A

70 Nylon Saucer



The Galaxy Collection: Aura

71 Technical drawing of the tea bowl.

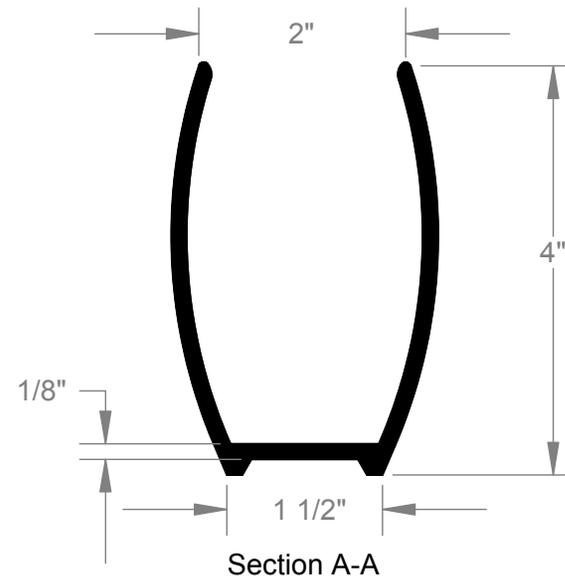
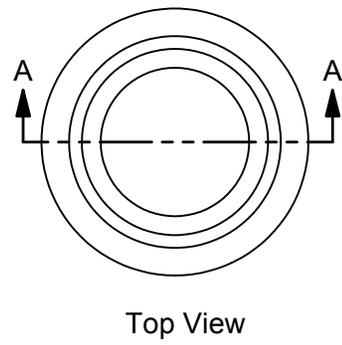


72 Nylon Tea Bowl

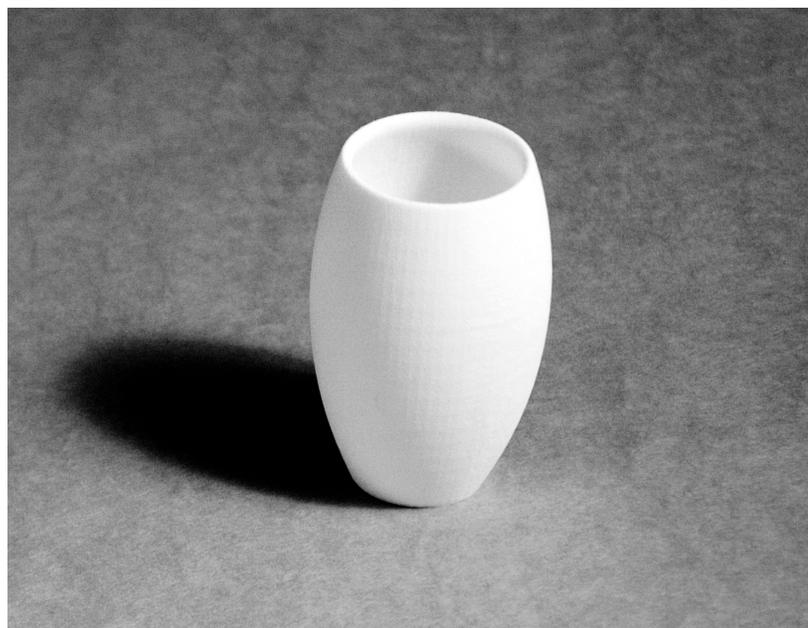


The Galaxy Collection: Aura

73 Technical drawing of the juice cup.

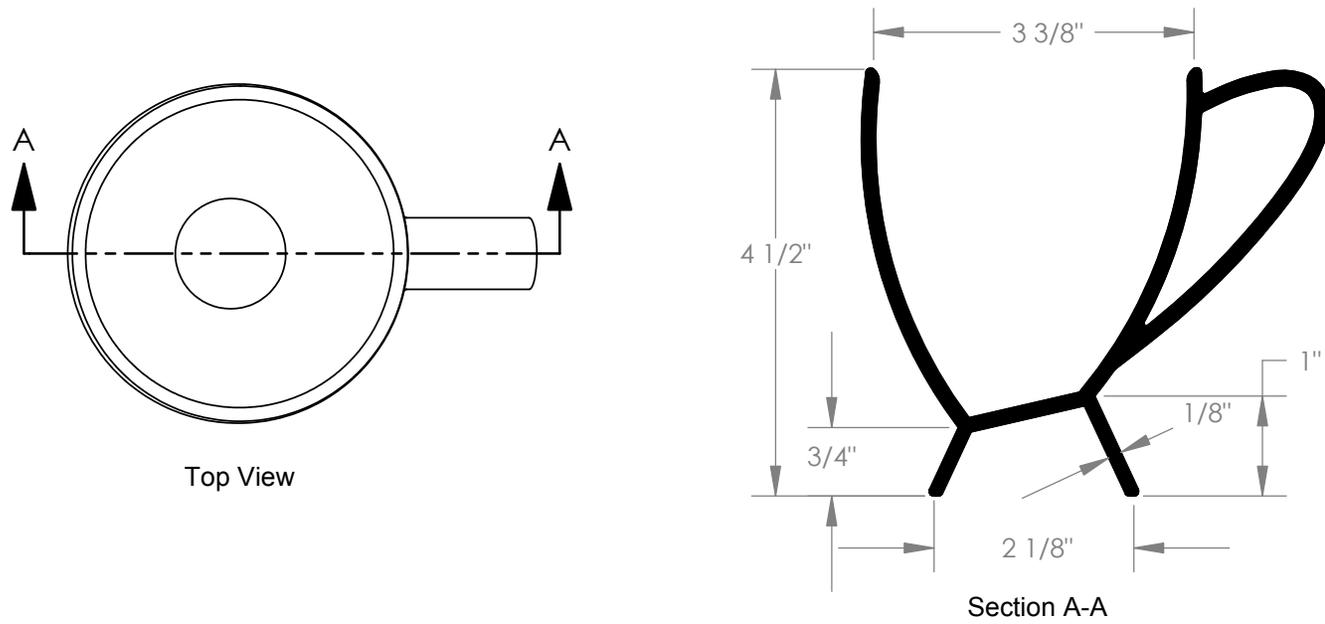


74 Nylon Juice Cup



The Galaxy Collection: Aura

75 Technical drawing of the mug.

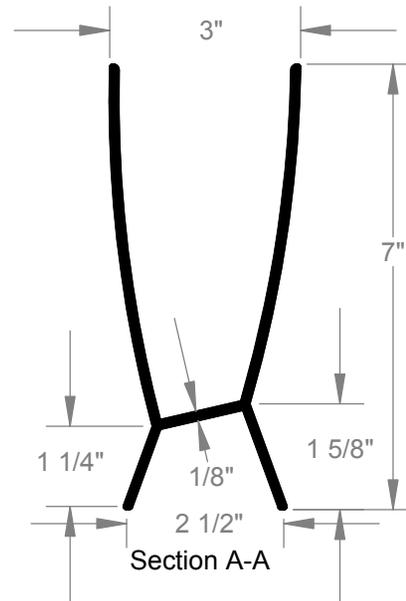
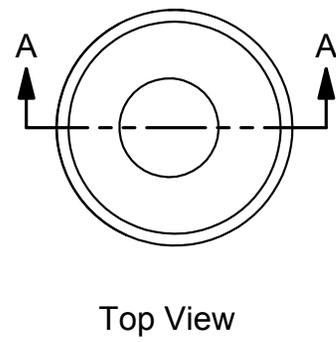


76 Nylon Mug



The Galaxy Collection: Aura

77 Technical drawing of the tumbler.

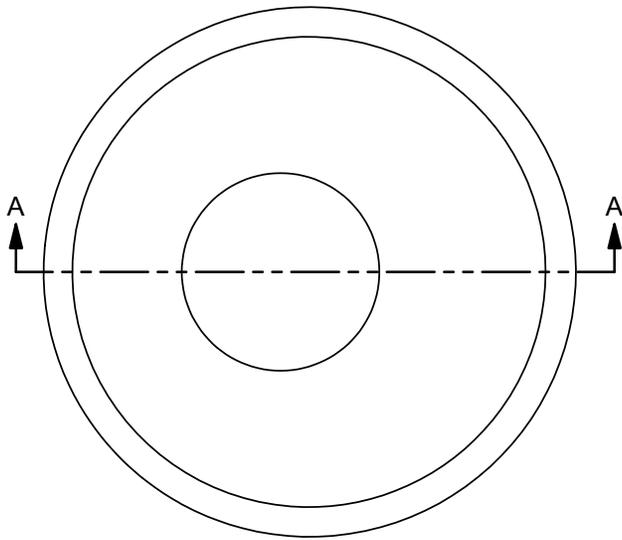


78 Nylon Tumbler

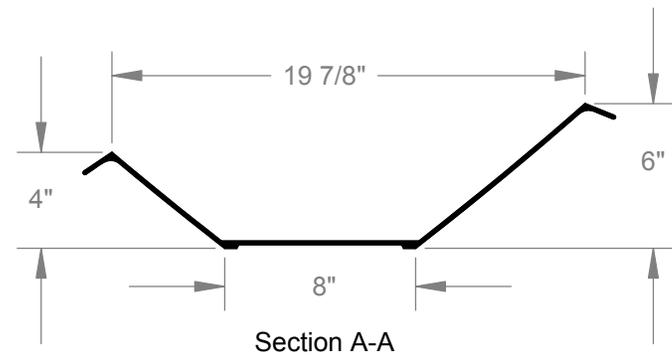


The Galaxy Collection: Aura

79 Technical drawing of the serving bowl.



Top View

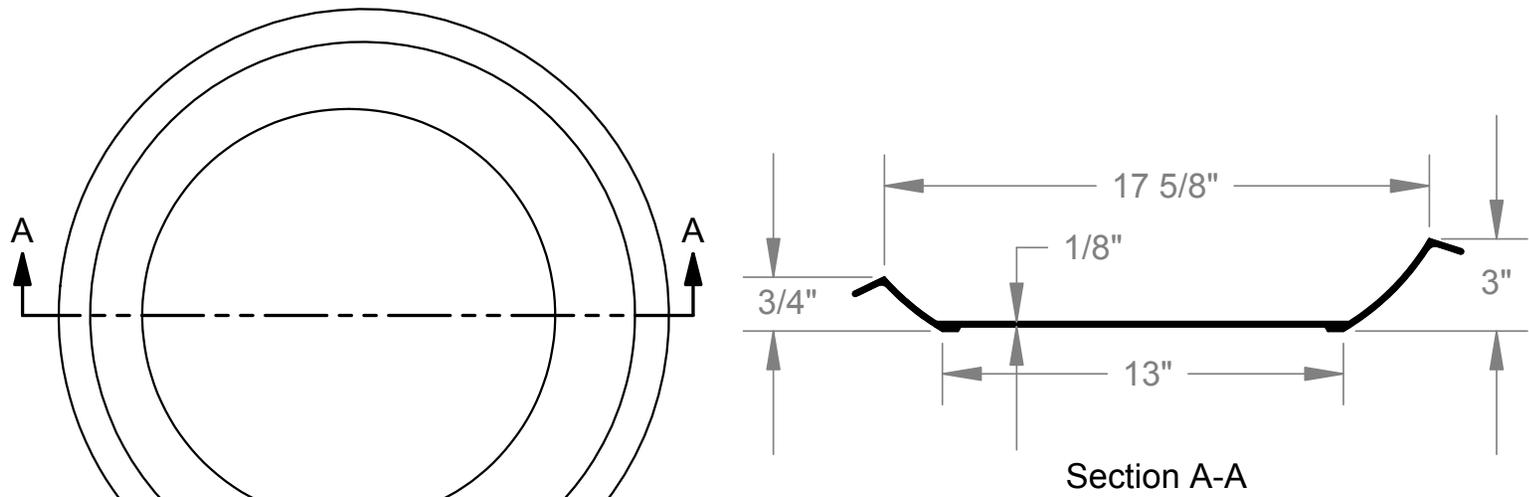


80 Nylon Serving Bowl



The Galaxy Collection: Aura

81 Technical drawing of the serving platter.



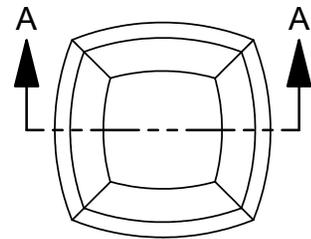
Top View

82 Nylon Serving Platter

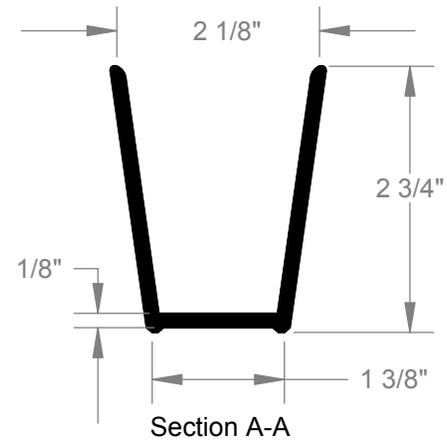


The Galaxy Collection: Brink

83 Technical drawing of the sake cup.



Top View



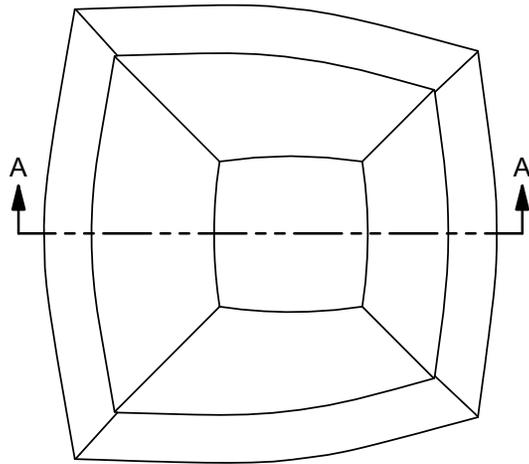
Section A-A

84 Nylon Sake Cup

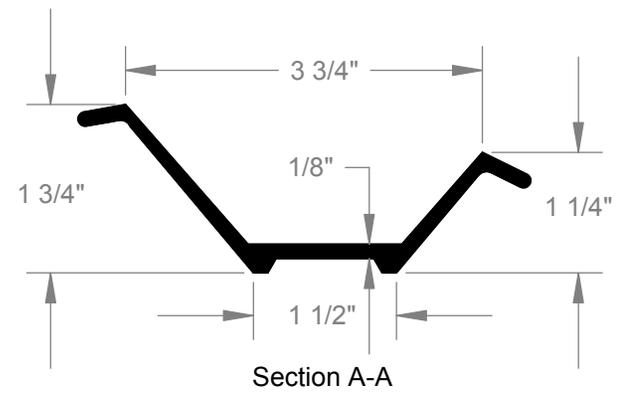


The Galaxy Collection: Brink

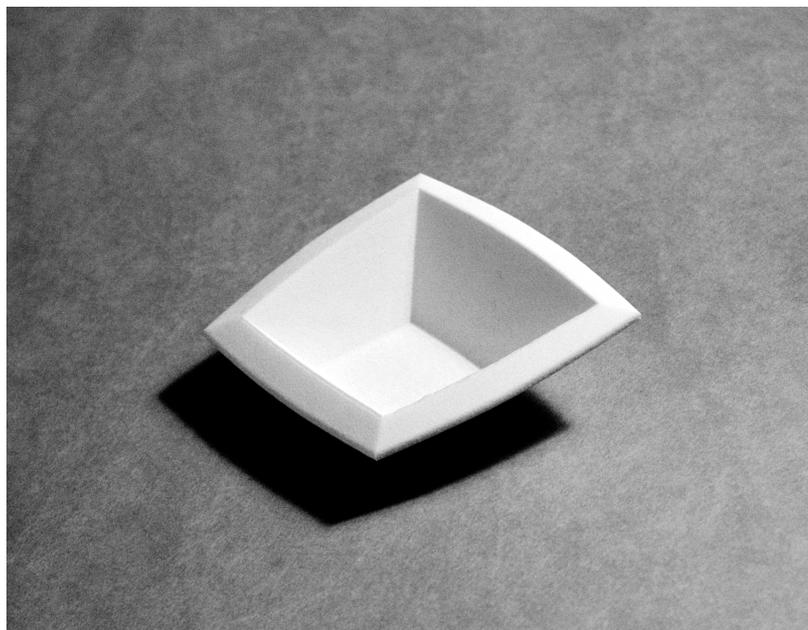
85 Technical drawing of the dipping dish.



Top View

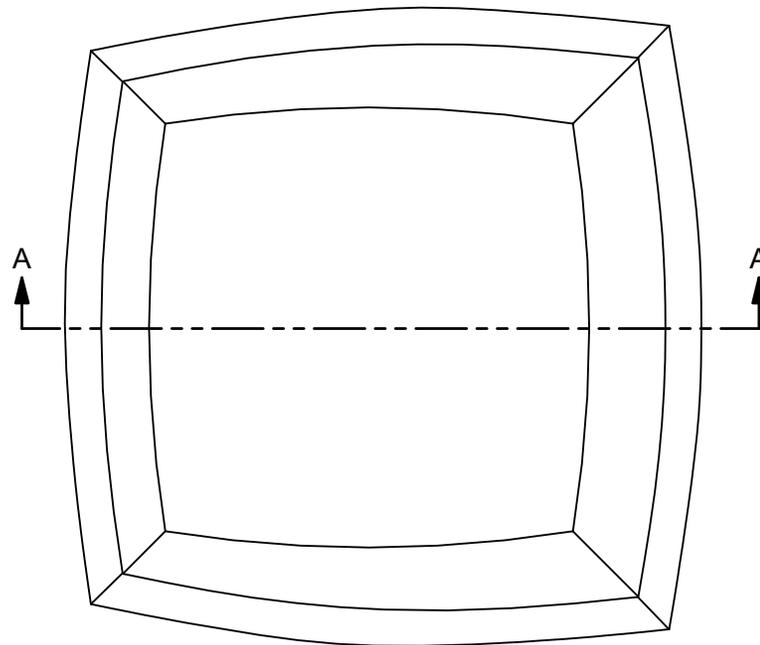


86 Nylon Dipping Dish

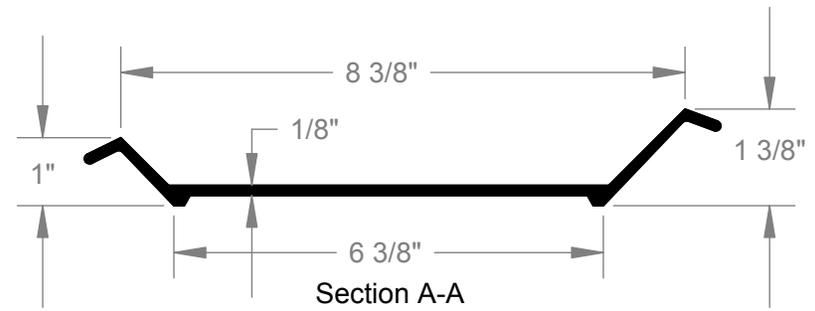


The Galaxy Collection: Brink

87 Technical drawing of the sushi plate.



Top View

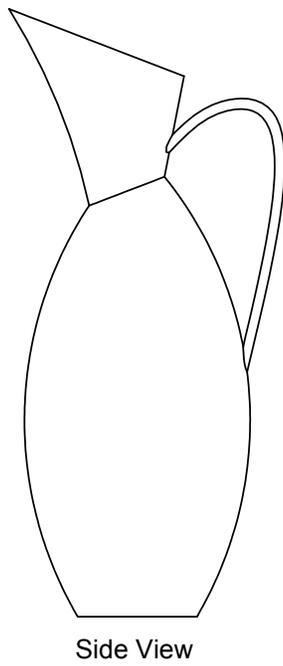
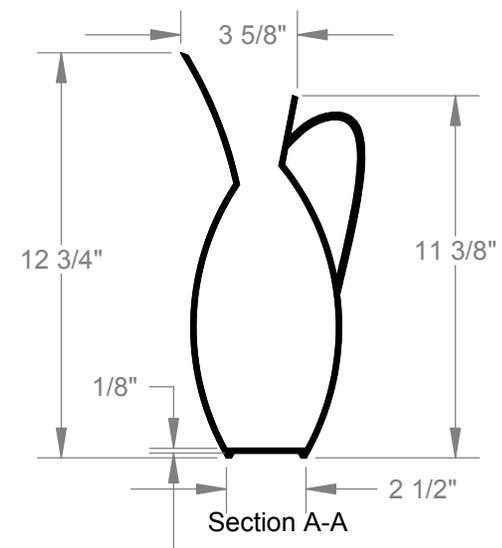
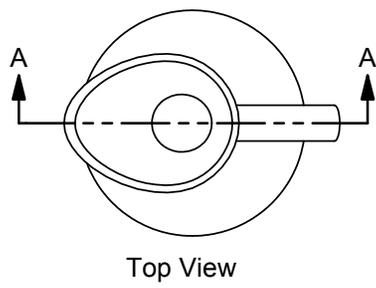


88 Nylon Sushi Plate



The Galaxy Collection: Aura

89 Technical drawing of the pitcher.



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Appendix: Dinnerware Survey for Food Service Professionals

How long have you been a Chef?

Where did you train to be a Chef?

How many restaurants/institutions have you worked for?

What is the ethnicity of the restaurant/institution you currently cook for?

Who picked out the dinnerware your restaurant/institution uses?

Where was the dinnerware purchased?

What are the aesthetic qualities of the dinnerware your restaurant/institution uses? (white, colored, design motifs, shape, size, weight, material, pattern specific to the institution)

What qualities about this particular dinnerware helps with your presentation of food?

What qualities about this particular dinnerware hinders your presentation of food?

What qualities would you change about your current dinnerware?

What pieces of dinnerware do you serve from the most?

Do you serve food that requires specific serving pieces? If yes, what?

What would be your ideal choice of color, pattern, weight, shape, and size for dinnerware?

How important is the choice of dinnerware to the dining experience?

What are the features about dinnerware that make it versatile in different settings?

Are there size constraints for your dinnerware due to plate covers or dishwasher racks?

Are you concerned with durability of dinnerware due to a high volume of use?

Are there thermal properties to the dinnerware that make it better for repeated high temperature situations such as heat lamps, salamander ovens, or industrial dishwashers?

Are you concerned with the weight of the dinnerware for servers?

Appendix: Dinnerware Survey for Individual Households

Gender	# of people	% of people
Male	22	(15%)
Female	127	(85%)
no answer	0	(0%)

Age	# of people	% of people
Under 25	3	(2%)
25-34	53	(36%)
35-44	39	(26%)
45-54	19	(13%)
55-64	28	(19%)
65-74	7	(5%)
Over 75	0	(0%)
no answer	0	(0%)

Household Type	# of people	% of people
Married, no children	43	(29%)
Married, with children	61	(41%)
Single Parent	10	(7%)
Single Person	34	(23%)
no answer	1	(1%)

Annual Household Income	# of people	% of people
Less than \$10,000	3	(2%)
\$10,000-20,000	5	(3%)
\$20,000-30,000	4	(3%)
\$30,000-40,000	9	(6%)
\$40,000-50,000	15	(10%)
\$50,000-70,000	30	(20%)
Over \$70,000	82	(55%)
no answer	1	(1%)

Occupation
139 responses

What is the most common type of dinnerware you use on a daily basis?

Fine China	8	(5%)
Casual Industrial Ceramics	112	(75%)
Glass	19	(13%)
Plastic	2	(1%)
Paper	8	(5%)
Handmade	14	(9%)
Other	7	(12%)

What pieces do you own in your most commonly used dinnerware set?

Dinner Plate	147	(99%)
Side Plate	138	(93%)
Side Bowl	136	(91%)
Mug	92	(62%)
Salt/Pepper	48	(32%)
Teacup/Saucer	66	(44%)

Teapot	25	(17%)
Water Pitcher	18	(12%)
Serving Bowl	92	(62%)
Platter	79	(53%)
Covered Casserole	35	(23%)
Butter Dish	35	(23%)
Gravy Boat	31	(21%)
Ramekin	16	(11%)
other:	19	(13%)

What pieces from your most commonly used dinnerware set do you use on an everyday basis?

Dinner Plate	141	(95%)
Side Plate	95	(64%)
Side Bowl	109	(73%)
Mug	42	(28%)
Salt/Pepper	21	(14%)
Teacup/Saucer	6	(4%)
Teapot	8	(5%)
Water Pitcher	2	(1%)
Serving Bowl	27	(18%)
Platter	12	(8%)
Covered Casserole	5	(3%)
Butter Dish	6	(4%)
Gravy Boat	1	(1%)
Ramekin	6	(4%)
other:	6	(4%)

Who manufactured your most commonly used dinnerware set?

133 responses

Who purchased your most commonly used dinnerware set?

You	86	(58%)
Spouse	12	(8%)
Received as a Gift	50	(34%)
Inheritance	10	(7%)
other:	9	(6%)

How was your most commonly used dinnerware set purchased?

As Individual Pieces	38	(26%)
In Small Groupings	53	(36%)
As A Whole Set	62	(42%)
other:	7	(5%)

Where was your most commonly used dinnerware set purchased?

Online	6	(4%)
Department Store	54	(36%)
Discount Store	25	(17%)
Retail Store	38	(26%)
other:	32	(21%)

Appendix: Dinnerware Survey for Individual Households

When choosing your most commonly used dinnerware set, were you looking for a specific feature?

color	95	(64%)
size	39	(26%)
shape	42	(28%)
pattern	63	(42%)
texture	18	(12%)
material	41	(28%)
weight	21	(14%)
other:	22	(15%)

What is the style of your most commonly used dinnerware set?

All white	35	(23%)
All One Color Besides White	21	(14%)
Design on the Rim	47	(32%)
Design Over the Whole	39	(26%)
other:	17	(11%)

When choosing your most commonly used dinnerware set, was the ability to put the dishes in a microwave a factor?

Yes	117	(79%)
No	27	(18%)
no answer	5	(3%)

When choosing your most commonly used dinnerware set, was the ability to put the dishes in a dishwasher a factor?

Yes	120	(81%)
No	27	(18%)
no answer	2	(1%)

Do you use accent pieces that are not exact matches to your set?

Yes	122	(82%)
No	27	(18%)
no answer	0	(0%)

What are the most common accent pieces that you use?

Dinner Plate	5	(3%)
Side Plate	16	(11%)
Side Bowl	25	(17%)
Mug	26	(17%)
Salt/Pepper	47	(32%)
Teacup/Saucer	8	(5%)
Teapot	18	(12%)
Water Pitcher	27	(18%)
Serving Bowl	73	(49%)
Platter	61	(41%)
Covered Casserole	42	(28%)
Butter Dish	31	(21%)
Gravy Boat	17	(11%)
Ramekin	15	(10%)
other:	7	(5%)

What materials are your accent pieces made out of?

Fine China	11	(7%)
Industrial Ceramics	87	(58%)
Handmade Ceramics	49	(33%)
Glass	38	(26%)
Wood	21	(14%)
Plastic	4	(3%)
other:	6	(4%)

How many other matching sets of dishes do you own? (does not include your most commonly used dinnerware set)

1	63	(42%)
2	37	(25%)
3	16	(11%)
4	4	(3%)
5 or more	5	(3%)
no answer	24	(16%)

What types of materials are your other dinnerware sets?

Fine China	86	(58%)
Industrial Ceramics	57	(38%)
Handmade Ceramics	11	(7%)
Glass	12	(8%)
Wood	1	(1%)
Plastic	2	(1%)
other:	5	(3%)

Are any of your other dinnerware sets Holiday specific?

Yes	45	(30%)
No	96	(64%)
no answer	8	(5%)

On average, how many times a week do you cook dinner at home?

1	2	(1%)
2	16	(11%)
3	28	(19%)
4	29	(19%)
5	35	(23%)
6	26	(17%)
7	10	(7%)
no answer	3	(2%)

When eating dinner at home, where in your home do you eat?

At a Kitchen Table	66	(44%)
At a Dining Room Table	39	(26%)
In Front of a Television	53	(36%)
other:	18	(12%)

On average, how many times a week do you bring dinner home?

1	68	(46%)
2	38	(26%)

Appendix: Dinnerware Survey for Individual Households

3	14	(9%)
4	3	(2%)
5	2	(1%)
6	0	(0%)
7	0	(0%)
no answer	24	(16%)

When bringing home dinner, do you eat out of the container it was transported in or do you transfer it to your own dinnerware?

Original Container	30	(20%)
Transfer to Dishes	104	(70%)
no answer	15	(10%)

On average, how many times a week do you eat dinner out?

1	69	(46%)
2	42	(28%)
3	19	(13%)
4	3	(2%)
5	2	(1%)
6	0	(0%)
7	1	(1%)
no answer	13	(9%)

On average, how many times a month do you entertain dinner guests?

1	66	(44%)
2	35	(23%)
3	19	(13%)
4	10	(7%)
5	6	(4%)
6	2	(1%)
7	0	(0%)
8	0	(0%)
9	0	(0%)
10 or more	0	(0%)
no answer	11	(7%)

What type of dinnerware do you use when you entertain?

Fine China	41	(28%)
Industrial Ceramics	95	(64%)
Handmade Ceramics	28	(19%)
Paper	13	(9%)
Glass	10	(7%)
Wood	1	(1%)
Plastic	3	(2%)
other:	8	(5%)

What pieces do you most commonly use when entertaining?

Dinner Plate	138	(93%)
Side Plate	106	(71%)
Side Bowl	91	(61%)
Mug	38	(26%)
Salt/Pepper	58	(39%)

Teacup/Saucer	30	(20%)
Teapot	10	(7%)
Water Pitcher	32	(21%)
Serving Bowl	105	(70%)
Platter	95	(64%)
Covered Casserole	40	(27%)
Butter Dish	49	(33%)
Gravy Boat	22	(15%)
Ramekin	11	(7%)
other:	4	(3%)

Do you serve out of dishes you cook in?

Never	10	(7%)
Rarely	42	(28%)
Sometimes	68	(46%)
Often	25	(17%)
Always	4	(3%)
no answer	0	(0%)

On average, how many times a week do you serve these types of food for dinner?

African		
1	17	(11%)
2	1	(1%)
3	0	(0%)
4	2	(1%)
5	1	(1%)
6	0	(0%)
7	0	(0%)
no answer	128	(86%)

American		
1	8	(5%)
2	26	(17%)
3	41	(28%)
4	39	(26%)
5	16	(11%)
6	6	(4%)
7	3	(2%)
no answer	10	(7%)

Asian		
1	62	(42%)
2	12	(8%)
3	7	(5%)
4	3	(2%)
5	1	(1%)
6	0	(0%)
7	0	(0%)
no answer	64	(43%)

Appendix: Dinnerware Survey for Individual Households

Indian

1	28	(19%)
2	9	(6%)
3	2	(1%)
4	0	(0%)
5	0	(0%)
6	0	(0%)
7	0	(0%)
no answer	110	(74%)

Italian

1	64	(43%)
2	36	(24%)
3	11	(7%)
4	3	(2%)
5	0	(0%)
6	0	(0%)
7	1	(1%)
no answer	34	(23%)

Mexican

1	74	(50%)
2	15	(10%)
3	9	(6%)
4	1	(1%)
5	0	(0%)
6	1	(1%)
7	0	(0%)
no answer	49	(33%)

Middle Eastern

1	22	(15%)
2	8	(5%)
3	2	(1%)
4	0	(0%)
5	1	(1%)
6	0	(0%)
7	0	(0%)
no answer	116	(78%)

South American

1	15	(10%)
2	4	(3%)
3	1	(1%)
4	0	(0%)
5	0	(0%)
6	0	(0%)
7	0	(0%)
no answer	129	(87%)

Spanish

1	14	(9%)
2	7	(5%)
3	2	(1%)
4	0	(0%)
5	0	(0%)
6	0	(0%)
7	0	(0%)
no answer	126	(85%)

Other

17 responses

When serving these foods, do they require special service dishes?

Yes	13	(9%)
No	134	(90%)
no answer	2	(1%)

What type of special serving dishes do you use?

30 responses

Appendix: Vita

Martha Sullivan

Education

Master of Science in Architecture with a Concentration in Industrial Design
Virginia Polytechnic Institute and State University, December 2006

Bachelor of Science in Geology with a Concentration in Geochemistry
Virginia Polytechnic Institute and State University, May 1996

Workshops

Glass-Blowing at the Bench Torch with Elizabeth Mears, July 2006

Altered Pots with Marcia Bugg, June 2005

Introduction to Flameworking with Jennie Baxter, June 2005

Blacksmithing for the Home and Garden with Paul Garrett, July 2005

The Jacksonville Center for the Arts in Floyd, Virginia

Teapot Dissection with Ah Leon as a Work Study Student, July 2003
Penland School of Crafts in Penland, North Carolina

Lidded Vessels with Mary Law, June 2003
Haystack Mountain School of Crafts in Deer Isle, Maine

Kiln Building with Tracy Dotson, May 2001
The Energy Exchange in Spruce Pine, North Carolina

Utilitarian Pots with Leah Leitson, May 2001
Wood Firing with Peter Rose as a Work Study Student, August 2000
Raku Firing with Obie Clark as a Work Study Student, September 2000
Basic Pottery with Marcia Bugg, February 1998
John C. Campbell Folk School in Brasstown, North Carolina

Experience

Founded Sol Pottery Studio and Gallery in September 1998 as a full-time professional potter and instructor of Basic Pottery. Currently operating as a sole proprietorship in Floyd, Virginia.

Board of Directors, Jacksonville Center for the Arts, June 2005 to current in Floyd, Virginia: serving as Secretary and Chair of the Education Committee for a non-profit community arts organization.

Retail Sales Clerk at the Matrix Gallery, August 2005 to current in Blacksburg, Virginia: sales, receiving inventory, office assistance.

Studio Assistant for Hunt Prothro, spring of 2001, 2002, and 2003 in Rhoesville, Maryland: pottery apprenticeship, application of surface decoration, studio maintenance.

Studio Assistant for Silvie Granatelli, July 1999 to August 2000 in Floyd, Virginia: pottery apprenticeship, slip casting, preparing drape molds, glaze mixing, studio maintenance, packing and shipping, office assistance.

Slip Casting Assistant for Davin Butterfield, October to December 1999 in Floyd, Virginia: pottery apprenticeship, slip casting.

Greenhouse Manager and Lab Assistant at CropTech Corporation, August 1996 to September 1998 in Blacksburg, Virginia: providing care for research plants from incubator to greenhouse, preparing sterilized growth media, greenhouse maintenance, and lab maintenance.

Honors

Student Initiated Research Grant, September 2006, Virginia Polytechnic Institute and State University
Gianninoto Graduate Scholarship, July 2006, Industrial Designers Society of America
Werner Graeff Memorial Book Award, April 2006, Virginia Polytechnic Institute and State University
Tau Sigma Delta National Honor Society for Architecture and Allied Arts, April 2006
Award of Distinction at Art in the Park, Danville, Virginia, May 1998

Instruction

Graduate Teaching Assistant, School of Architecture + Design, Virginia Polytechnic Institute and State University in Blacksburg, Va.
Design Related Media/ Materials and Processes with Ellen Braaten, January 2005 to December 2006: clay preparation, loading and firing student work, studio maintenance, demonstrations in handbuilding, wheelthrowing, slipcasting, and glazing clay objects.
Inside Architecture, June 2005 and 2006: a weeklong workshop teaching architecture and design to high school students.

Workshop Instructor, Jacksonville Center for the Arts in Floyd, Virginia.

Functional Pottery from the Wheel, July 2005 and August 2006: instructing a weeklong workshop of the theories and technics behind functional pottery made on the wheel.

Workshop Instructor, John C. Campbell Folk School in Brasstown, North Carolina

Understanding Pottery in July 2006: instructing a weeklong workshop of basic pottery skills to an inter-generational class.

Fundamentals of Function in May 2002, October 2003, October 2004, and December 2005: instructing a weeklong workshop of the theories and technics behind functional pottery made on the wheel.

Workshop Instructor, Roswell Visual Arts Center in Roswell, Georgia

Pit Firing in August 2004: instructing a weekend workshop on building and firing a pit fired kiln for clay objects.

Studio Assistant, Penland School of Crafts in Penland, North Carolina: aiding instructor and facilitating student experience, glaze mixing, loading and firing student work, studio maintenance.

Models and Mold-making with Dan Mehlman, June 2006

Functional and Sculptural Pottery with Cynthia Bringle and Tom Suomalainen, July 2004

Faculty Assistant, Arrowmont School of Arts and Crafts in Gatlinburg, Tennessee: aiding instructor and facilitating student experience, glaze mixing, loading and firing student work, studio maintenance.

Figurative Sculpture with Louise Radachowski April 2005

Expressing the Figure in Clay with Debra Fritts, April 2004

Ornately Functional: Form and Surface with Kristen Kieffer, March 2004

Handmade Tiles with Kate Inskeep, March 2004

Sculptural Transformations with Tre Arenz, April 2003

Pots from Bisque Molds with Lisa Orr, July 2002

Porcelain Pots for the Table with Silvie Granatelli, March 2002

Instructor Assistant, John C. Campbell Folk School in Brasstown, North Carolina: aiding instructor and facilitating student experience, glaze mixing, loading and firing student work, studio maintenance.

Handbuilding with Judy Robkin, October 2004

Functional Pottery with Suze Lindsey, January 2002

Basic Pottery with Marcia Bugg, February 2001