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RD Field Tobacco Jar

The Wedge O'Pie Project or The Cunningham Tobacco Jar

Jonathan Kaplan explains the production process involved

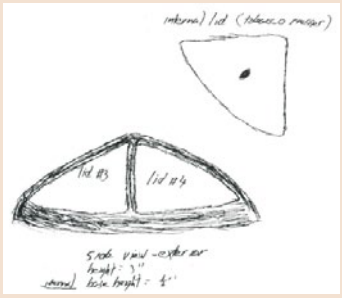
Completed Tobacco Jar. *Cone 6 whiteware. 4.5 x 8 in.*

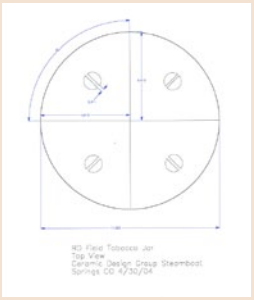
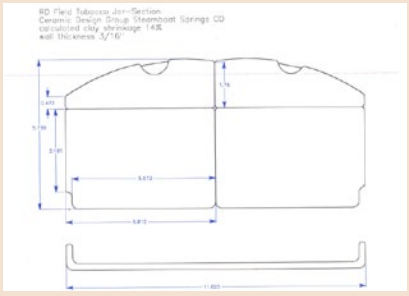
Handmade pottery and ceramic product design often make for strange bedfellows. It is not that they are mutually exclusive of each other. Potters are makers of objects. Drawn to that deep tactile and emotive force that working with clay elicits, the vocabulary of process is paramount. Everything involved with shaping clay by hand defines our thinking about the entirety of every action that we take as makers of the hand-formed object. What differentiates the making of handmade pottery from ceramic product design is not only a choice of words but the actions necessary as a design process with conceptualisation, visualization, designing and then, finally, the making of the piece. This process starts on paper. There can be volumes of handwork but computer modelling, sketching, drawing, CNC machining or hand-making of the model and other steps are those that extend our thinking about what is necessary to design a ceramic product for reproduction by slip casting, hydraulic pressing or jigger-jolly. Even though the materials and perhaps some of the processes may be similar to making pottery by hand, the vocabulary and skill sets required as designers, not as makers, separates these two

areas. An understanding of ceramic process is extremely valuable to ceramic product designers.

My prejudice is for a design-based thinking in ceramics. This does not exclude that joy of making work one-off by hand. A frustration that I have often felt is: how does one educate aspiring ceramics students to the necessity of not only working as makers of objects where process is quite important but to embrace a design-based study that emphasises the relationship between both areas. While this is certainly a personal bias, my many years as a production potter and its subsequent morphing into a career as a ceramic designer and manufacturer showed me the obvious differences and the interdependence between the two areas.

As a manufacturer, my client base was quite diverse. Every project required a merging of technique and skill from both areas. Each project was completely different from the preceding one. And yes, hand-work was essential with each one, whether the final product was slip cast, jiggered or hydraulically pressed. But the most important part of every project was the design thinking necessary to develop a project before any plaster or clay was used. Such was the situation when a sketch on a napkin, so to speak, appeared in my mailbox. Preceded by a phone call, I had a rough idea of what to expect when I examined the rudimentary drawing. My prospective client was an importer of fine handmade briars (smoking pipes) and their tobacco from around the world.



Left: ***RD Field's Original Sketch****. Right:* ***Two Technical Drawings.***

In fact, RD 'David' Field is one of the acknowledged experts in all things relating to this niche market and industry. Field's idea was, in theory, quite simple: a circular container that would hold four different types/flavours of smoking tobacco in separate compartments. Not only would each compartment have a lid with a rubber gasket to maintain the moisture content in the tobacco but the compartments would also contain a 'presser', or a weighted device that would compress the loose tobacco and keep it further sealed from the atmosphere.

My client's introductory letter with his rudimentary sketch showed a crude hemisphere with four depressions. Imagine throwing a low bowl, inverting it on a bat, dividing it into fourths, and then pushing a circular detent into each area and then including a separate cover with each section. So deceptively simple, yet as a designer, I have always found it necessary to start with visualizing the many steps necessary to design a product: Could the item be RAM pressed? Could it be slip cast? How would a project such as this one release from a casting mould? Were there too many opposing draft angles resulting in many opposing surfaces that would prohibit an easy discharge even in an air release mould. The options were limited to slip casting or hydraulic pressing. Given the design parameters, RAM pressing was quickly eliminated.

My client's concept was bolstered by his desire to be the first in his industry with a designer tobacco jar that he could essentially 'private brand'. In a field that was really showing little growth, Field's thinking was that a way to increase sales, market share, as well as to promote his own name, was to provide a limited edition tobacco jar that would set his product line apart from others.

I am not a highly skilled draftsman but my sketching abilities can usually get the point across and what I quickly learned by roughly sketching out some ideas, the idea of a hemisphere with four detents or depressions was problematic. Further, perhaps the most critical part of the design was the quantity of tobacco that each section would contain. Additional issues included the detailing of the lids and the presser device that was to sit on top of each charge of tobacco inside each separate depression. Clearly size was a consideration. Field's initial idea was that the entire piece be no more than 10 inches in diameter and perhaps five to six inches high. It became apparent that such size criteria would not accommodate one piece containing the four separate areas and

their needed components while trying to maintain a simple and elegant design. Following are the design processes. I arrived at this in quite a circuitous manner using a few different methods but each method was the result of a sketch.

The first was to throw a series of bowls with different contours, heights and diameters. As these set up I inverted and divided them into four quadrants at 90 degrees. A small circular section was removed from each area and equally as small thrown bowls were affixed into each area. A gallery was created for a lid, a small lid made and the first study model was created. What resulted was a complex form with many opposing draft angles. I could not create a deep enough gallery to contain the lid and its gasket that would not compromise the quantity of loose tobacco in each section. The sloping curve would diminish the amount of tobacco product. The design intent was to keep the line of the hemispherical surface smooth and unencumbered. It was not possible given the need for a lid; its gallery, the presser and the tobacco.

My next approach was to modify the hemisphere concept. I drafted the shape on paper and created a set of jigger tooling. After the moulds and forms created on the jigger–jolly machine were drying, a second set of tooling was made for the smaller bowl forms that would be used to create the areas for tobacco storage. After assembly, I also reached the conclusion that the

Left: ***The completed jar and its components.*** *Centre:* ***The 4 quadrant jar and its companion tray.***
Right: ***One of four identical quadrants showing the lid with its rubber seal and the presser device.***

hemispherical concept could not be configured with the correct geometry to contain the necessary areas for tobacco, the lids and the pressers just as in the first design study. Clearly it became quite obvious that a redesign of the entire project was prudent. My client was willing to devote additional time and funds for me to redesign the tobacco container.

Using Ashlar Vellum 'Graphite' software, I designed a lidded form that could easily be replicated that when grouped together in sets of four as interchangeable parts. The base of each quadrant was detailed so that they sat in a low profile plate. The hemispherical contour was preserved. The lid needed ample room so that a rubber gasket would fit into a cast groove in the lid flange. Enough space was also needed within each quadrant to accommodate a correct amount of tobacco and also a low profile 'presser' device. The lid was detailed so that the thumb and forefinger could grasp an unglazed ceramic surface cast into the top of the lid. A small curved area was included in the lid so that using a wax marker, the type of tobacco could be written on the lid for identification.

One of the many advantages of using Ashlar-Vellum software is their patented 'Drafting Assistant' that allows for the perfect and precise alignment of every arc, line segment, curve, radius and dimension. View options are many. While this drawing is quite simple, the ability of this software to create intricate drawings, viewable from many different orientations, to mention just a few is an advantage. Further, should such a project require machined parts, the drawings can be exported in a variety or formats to a lathe or milling machine equipped with CAD/CAM software.

This drawing provided an exact visual representation of what would be then created in clay. Approved by my client with a few minor revisions, the next step was to create a model. The final drawing was enlarged 12% to account for the shrinkage of my casting body. The first model was created in Hydrostone and was a solid representation of the entire construction less the plate. I made a series of drawings based on the Graphite elevation and turned its rough shape. It was further refined and detailed for RD Field. Division lines were scribed on the surface showing where each quadrant was to be divided. My intention was to use the table saw and cut the solid model into four quadrants and then sand and dimension each one, then picking the best so that I could create a block, or first mold. Understanding that each quadrant was the same as the next and would easily

be interchangeable with its brothers and sisters, I really only need only one perfect, oversized Hydrostone piece. This proved quite elusive, as my first attempts did not account for the kerf of the saw-blade as well as the lack of precision of my table saw or band saw. I found that each quadrant cut from the original Hydrostone solid model had slight differences from each other.

Some of the draft angles could not be made perfect and thinking down-stream, to then visualize the entire process and finished piece, they would then not fit perfectly next to each other nor fit correctly in the plate. Even with precise squares and other measuring devices, I was not able to make a plaster model that could be used to make the first casting mold.

The Hydrostone models, however, have a purpose. As slightly imperfect as they were, I decided to produce a working gang mold from each of the four models so that I could have ceramic castings that could serve to at least provide the client with yet another step in the process to be able to then see how the project was developing. The gang mold, while not calculated into the original tooling costs, was nonetheless a useful exercise as my client was quite happy to see how the final project would shape up. This mold created a few completely glazed and finished presentation pieces that were quite useful to diagnose any potential problems or rework new design ideas.

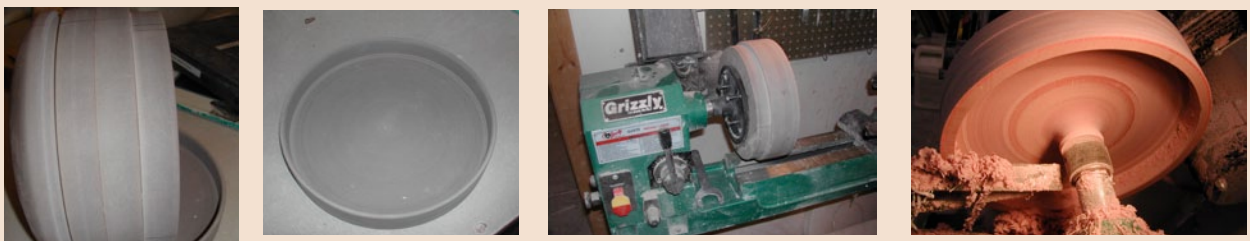
The next step was to create a perfect model out of a non-gypsum material. I chose Ren-Shape

Left: ***Making the gang mould.*** *Left centre:* ***Hydrostone model on set up slab.*** *Right centre:* ***Preparing to cast gang mold spare.*** *Right:* ***Gang mold spare.***

styling board, a polyurethane composition product that is extremely easy to tool. This product is available in many different densities for machining applications and has a variety of adhesives and filler pastes for each. It can be sanded, turned, taped, cut and worked with conventional woodworking tools and maintain dimensional stability. At this time the project was re-titled the *RD Field Wedge O'Pie Project*.

Working from the Ashlar Vellum drawings, I oversized the original drawing by 12 percent to allow for the shrinkage of the casting body. I rough cut disks of Ren-Shape on the band saw and laminated them to achieve the proper thickness and then lathe turned the body, the lid, and the plate in their entire solid shapes. These pieces were cut on the bandsaw and then checked, sanded, rechecked for dimensional and angular accuracy. Ren-Shape material is easy to both add material to as well as remove it. An entire selection of adhesives and build up materials are available. If mistakes are made, it is a simple process of combining a powdered resin and catalyst together and applying it to the part. After a few minutes of cure time, it can be sanded or otherwise shaped accordingly to repair or add dimension. Ren-Shape is completely non-porous and not affected by moisture. Even so, parting compound is always helpful for plaster release.

From these model sections, I then made a block mold of each part in Pottery #1 Plaster. Sample ceramic castings were made and checked. Afterwards, a rubber case system was made so that



Left: ***Complete Ren-Shape tooling before band saw cuts to provide quadrants and lid. The entire shape was turned as a solid form.***
Left centre: ***Ren-Shape tray.*** *Right centre:* ***Lathe set up****. Right:* ***Lathe turning the tray.***

production moulds were made for volume casting. Each complete *Wedge O'Pie* tobacco jar required four quadrants, each with a lid and a tray that contained these parts. The resulting ceramic product had nine ceramic pieces total.

Field also requested that each lid have a rubber seal so that there would be a positive seal between the quadrant and its lid. I designed the gallery in the lid part to have a groove that




Top left: ***Set up to pour rubber mould of the quadrant from Ren-Shape model.*** *Top centre:* ***Set up to pour rubber mould of the quadrant from Ren-Shape model.*** *Top right:* ***Finished rubber mold of the quadrant.*** *Above:* ***Ren-Shape model being used to make mould of the lid.*** *Right:* ***Set up of plaster models of the quadrant to pour rubber case mould (master mould).***




Left: ***Making the plaster working mould.*** *Left centre:* ***The foot of the model.*** *Right centre:* ***Checking for proper draft.*** *Right:* ***Setting the cottle.***

would accept a rubber 'O' ring. As the finishing of the greenware was not a precise practice, I chose 'O' rings of three different cross sections that were able to be switched out so that the seal between each lid and quadrant base was solid.

A second part of the system, to reduce air infiltration into the tobacco, was a 'presser' device; a small flat part that would rest on top of the tobacco to provide compression for the loose tobacco shreds. The initial concept was to cast small triangular sections of clay and attach an equally small handle. This would have required additional mould parts and glazing. A technical drawing was supplied to a plastics fabricator who then used their CAD/CAM abilities to laser cut and drill these parts from clear acrylic. I did attempt to fabricate these parts myself on the band saw and drill press but could not make the volume of parts needed that were perfectly dimensioned and precisely crafted. After receiving the manufactured parts, I attached a small phenolic ball knob

with a special allen head machine screw making it 13 total parts for each complete tobacco jar. The casting of quadrants and their lids was straightforward although there were many moulds to be turned on a weekly basis. Post-finishing with an X-Acto knife was done to remove the seams and spares and then a final sanding of the interior rims attained a straight edge to accept the lid with its rubber gasket.

Left: ***Casting the RD Field Tobacco Jar.*** *Right:* ***Finishing the greenware.***

Casting of the plate or tray to contain the four quadrants required additional post finishing. It was important that the unglazed foot be completely flat and that the rim be of equal height around its total circumference and parallel with the base. Even though the model was perfect, trimming the spare from the rim was a hand operation that sometimes resulted in removing some rim material as well. To make sure that the rim of the plate/tray be as level as possible and the correct height, the piece was inverted and the rim brought into true on a sanding disk. It was checked with a height gauge and then inverted on its foot and placed on the mould table surface to make sure that the piece did not discernibly wobble.

The work was bisque fired to 1800ºF or cone 06. Glazing was tedious considering the number of pieces. The interiors of the quadrants and their lids were poured. Their exteriors were sprayed. The plate/tray was also sprayed. Glaze was removed from the pick up device using a cut piece of 3M scrubbie affixed to a tongue depressor and then cleaned with a small sponge. The lid and base gallery were cleaned with a sponge to remove any over spray. The feet of all of the pieces were cleaned with a scrubbie. The pieces were then fired to cone 5 with my C57 White Glaze.

After the pieces were successfully designed and the first ones fired, Field decided to have images on the face of each quadrant as well as in the centre of the plate. The images were scanned from his originals and sent to a screen printer specialising in ceramic decals. After the pieces were glaze fired, decals were applied to each quadrant and to the centre of the plate. They were fired to cone 017. As the completed tobacco jars were to be drop-shipped to Field's clients, each complete tobacco jar was individually packaged into its own box and then master packed into a larger outer box.

The total time from inception of the project to finish was about four years, which was equally split between design time and manufacturing time. Several kiln misfirings as well as manufacturing difficulties delayed the project. As a designer, I wanted the project to be unique. As a manufacturer, the expeditious making of the work was of course a priority, as was a high level of craftsmanship but it was not to be so. Each of the many parts required significant handwork right up to the final packaging. What I learned was that complex designs, even if they appeared to be simple in nature, were time consuming to make. I am not sure at this point, well after the completion of the project, if it could have been manufactured in a factory setting considering the number of pieces involved and the amount of handwork involved. We made a total of approximately 100 complete *Tobacco Jars* in addition to those that were defective. While some money was made on the tooling, it was offset by the amount of handwork necessary to complete each piece that was not reflected in the final price, which was agreed on at the inception of the project. Field paid for the acrylic pressers, the ball knobs and the screws. His mark up reflected the usual doubling of the wholesale price plus shipping, called 'keystoning'. Then there was the markup by the vendor. Given Field's additional expenses, not to mention the many delays, I would think he probably broke even. The nature of his market and its relatively flat growth over these years, I am happy that we were able to sell through this unique ceramic product.

From David Field: Project Summary

As an importer and distributor of fine briar smoking pipes since 1980 I have had much experience in the tobacco trade, both at the wholesale and retail level. Over the past 10 years or so I have noticed a distinct propensity for retail buyers of fine pipes to want to experiment with different tobacco mixtures, often purchasing and trying several different blends at the same time. What was missing, I thought, was a distinctive tobacco jar that could store many blends in a central location, thus saving the customer time and effort in having to purchase many different tobacco jars or else having to store the varied tobaccos in containers such as canning jars and then having to place them away from heat and light.

I had what I thought was a rather simple concept: a ceramic tobacco jar composed of four different compartments and looking, from the outside, as a sort of apple pie with four removable lids on top (almost like four quarters of the top pie crust). Once I had the concept firmly in mind I had to find a manufacturer – a much tougher task than I had ever envisioned. I spoke with local potters, contacted universities, searched web sites. Finally, I found someone – Jonathan Kaplan, head honcho of the Ceramic Design Group. He could, I was sure, do the job in a wink and I would shortly have my unique product on store shelves. What I thought would take weeks actually stretched into years. I sent my concept drawings to Kaplan and he quickly found that my ideas could not be produced in ceramics. Too many nooks and crannies. What then? While Jonathan worked tirelessly trying to find a way to make my concept work I worried that this unique product would wind up being only a series of drawing on a piece of paper.

Kaplan came up with the actual design, which turned out to be more useful to the consumer than my original concept. Instead of having one large apple pie shape the jar would be composed of four individual quadrants, each resting on a common plate. Thus the quadrants could be stored together on the plate or separately, as the customer desired. The plate could also double as a blending plate, where various tobaccos could be placed and intermixed. Problem solved.

Not quite. Neither Jonathan nor I realized the cost and labour involved in going from concept to a real live product. Besides the complex ceramic castings, my concept involved each quadrant having a specially-cut piece of acrylic, called a presser, resting inside of each quadrant but on top of the tobacco so as to keep excess air away from the blend inside. Each presser would have to have a small knob in the centre so the presser could be removed when the customer wanted tobacco. Also, each top lid had to have a rubber seal in order to further keep out moisture-robbing air. The inside bottom of the plate was to have a rather large logo for the jar, proclaiming that it was made in the USA. Plus, I wanted to retail the piece at what I considered to be a reasonable cost.

This last goal proved to be impossible. Kaplan had to buy materials, cut and fashion them into usable components and put them together. While he did this at close with no profit I saw my costs soar to unanticipated levels. I had to retail the jar at about double the price of other tobacco jars. Even so, when the cost of packing and shipping the completed jars was added to my initial cost per jar my profits, too, slipped to almost nil. Although neither of us made any money we, together, did turn out and sell a unique product. As of today the total run has sold out.

Technical Information

CDG Whiteware Casting Slip Formula – cone 5-7

Velvacast Kaolin	20
Pioneer Kaolin	10
Old Hickory FC 340 Ball Clay	10
Old Hickory Ti 21 Ball Clay	10
Flint	15
Nephylene Syenite	15
Kona F-4 Feldspar	15
Pyrophyllite	5
Total	**100**

This formula is deflocculated with Darvan 811 and casts best with a specific gravity of 1.78-1.80

CDG C-57 White Gloss cone 5-7

Frit 3134	50
EPK	30
Flint	20
Total	**100**
Zircopax	15

This is a versatile glaze. Without the Zircopax it is a clear glaze. With the addition of 6-8% Whiting, the glaze then becomes receptive to a variety of commercial stains. As one can see from the glaze title C57, the glaze has a range of cone 5-7.

Jonathan Kaplan has a lengthy career as a ceramic artist, mould and model maker, educator and author. He is now busy reinventing his career as a ceramic artist, potter and curator of Plinth Gallery in Denver, Colorado, US. (www.plinthgallery.com)