

Furniture:

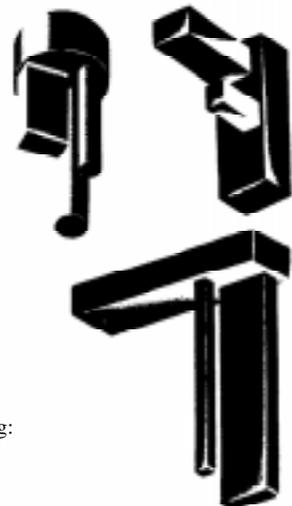
Here, with these furniture objects, decisions were based upon the following conceptual tenets:

- (1) Iakov Chernikov's "Constructive Joints", embracing and mounting
- (2) the structural idea of cantilevering.
- (3) engagement with material and tool.
- (4) ideal notions of geometry based upon the masons square and the golden section

Iakov Chernikov (1889-1951) was an architect and graphic technician of the Soviet avant-garde. His work, as a contemporary of the Constructivist movement, focused on the relationship of art and technology as well as educational theory. His development of "Constructive Principles" was the primary notion involved in his teaching. Among these principles was a series devoted to joining. In this study two such joints were used to focus the study. Those joints were "embracing" and "mounting".



Embracing:



Mounting:

Above: Iakov Chernikov's "embracing" and "mounting" connections. From *Architectural Design, Chernikov: Fantasy and Construction*. 'His theory and programme' Catherine Cooke. (redrawn)

Left: Table 3:1 (photograph)



Table 3:1, underside double angle/slot joint embodying 'embracing' concept (detail photo).

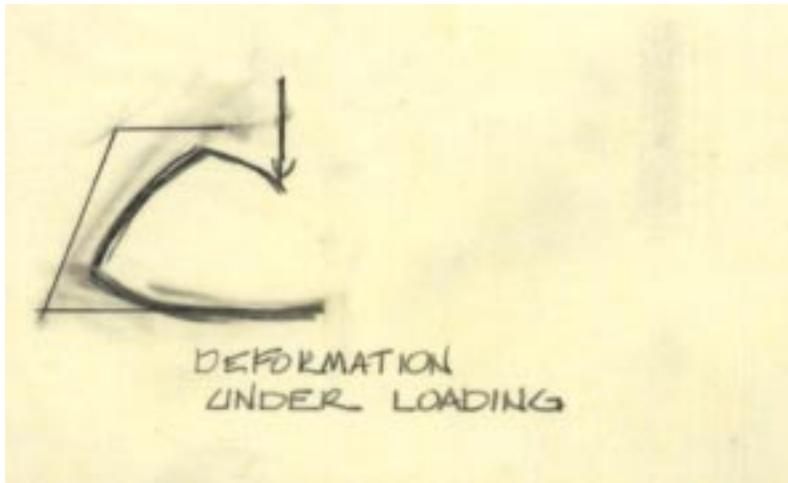
“Embracing” is embodied in the spatial qualities of the tables; the way the cantilevered steel embraces space. This joint type is also used where the two different materials engage one another. “Mounting” is used where like materials are joined. Wood-to-wood connections are glued; steel-to-steel connections are welded.

In “table 3:1”, the double angles were plug welded together then welded into place, centered on top of the steel plate. Two sheets of one-half inch Baltic Birch plywood were laminated after material was removed with a router to form the slot into which the double angle would slide.

The “Hammerhead” table investigates the stability of the embracing joint. The double angle of “table 3:1” was deleted in order to protect against overturn; here, a broader steel surface interacts with the wood. The role of “embracing” was reexamined, the slide lock angle came about because of the need to prevent slippage, a problem not encountered in “table 3:1” due to friction created by the three independent steel plates’ interaction with a single piece of wood. The slide lock is positioned at ninety degrees to the direction that the wood top slips around the steel, making it so that the top may not be removed without first removing the slide lock. The lamination of the plywood was done in the same way as with “table 3:1”, but the need for any welding was eliminated.



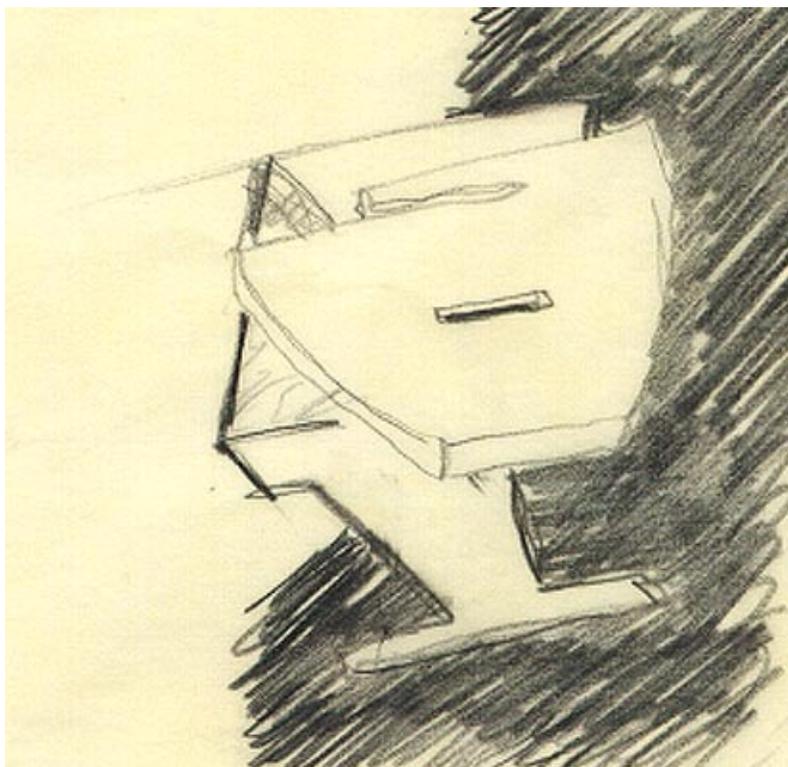
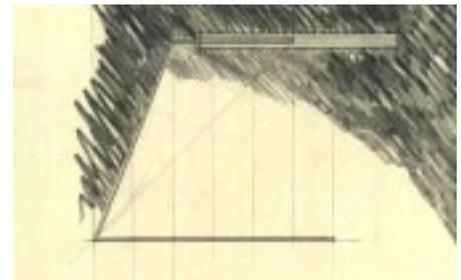
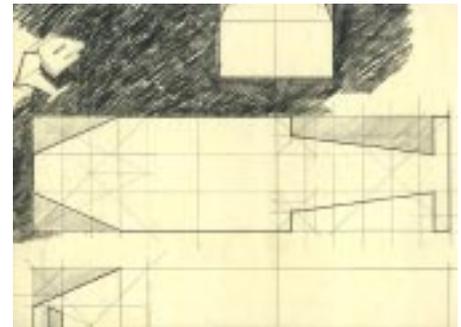
Table 3:1, topside, double angle/slot 'embracing' connection. Welded 'mounting' connection and lamination are also pictured. (detail photo).



The clarity of the structures found in the other projects are beginning to be advanced at this point. This project is successful in this regard. The scale of the project and the number of elements help to offer this sort of clarity.

Structurally, the tables are conceived as cantilevers, similar to many of the works by early modern designers including Marcel Breuer and Mies Van Der Rohe. Steel is used as the structure of the table. The removal of material from the sheet of steel is based upon the bending forces exerted upon the piece when loaded; where the material is needed for strength in bending the full width remains, where it is not needed it is removed. Thus, tapered forms are carved expressing the inner forces of the structure. The limits of steel's structural strength are pushed in choosing the flat unbraced section. The disposition of steel is questioned in pointing toward its deflective properties.

The layout of tapered material removal.



The origins of an appreciation for the bending of steel is also emerging, it will reemerge in the Laurentian Library project with a different purpose.

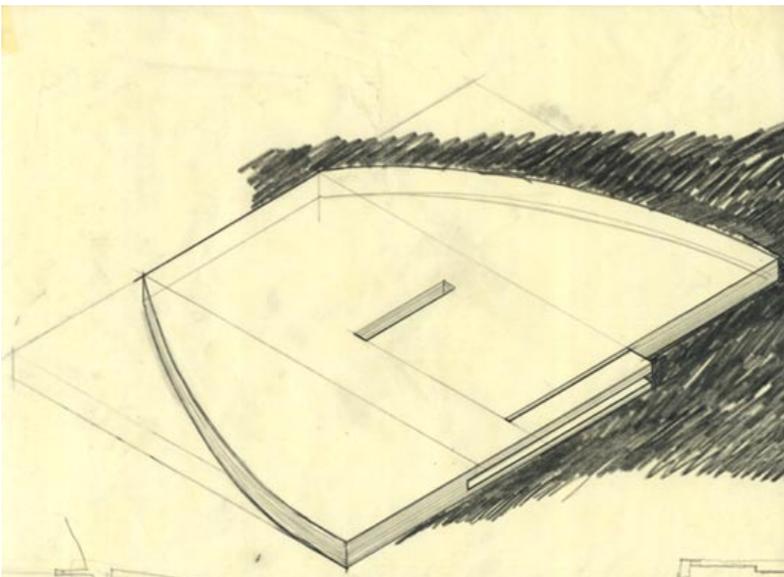
An engagement with materials and tools weighed heavily in design decisions, especially as experience was gained with the materials and an understanding of the tools emerged.

“Everything you touch leaves a mark on your soul.”
Greg Graffin

Two materials were selected based upon their availability, cost, manipulability, color, and disposition (hard and soft). A36 steel plate is used for the structural aspects and Baltic Birch plywood functions as the top surface. The materials are placed in ways that question their efficiency, and disposition. For example, the steel is placed in a way that questions its hardness, it becomes springy due to its thin section on the cantilever.

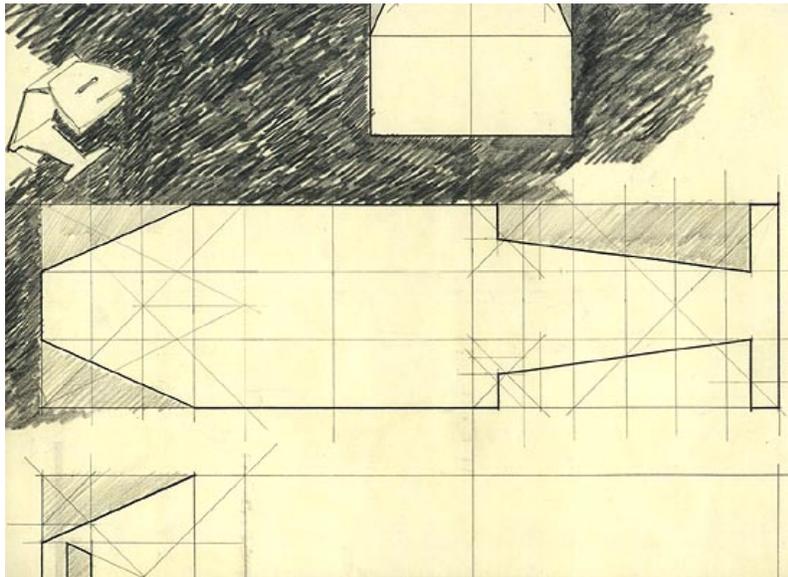
This kind of questioning and reversal shows itself in many forms throughout the projects. They are the origins of a preoccupation with revealing the dramatic nature of human endeavor. The dark side of architecture is constant, as is the optimistic. Every great story is, fundamentally, this opposition.

Hammerhead, axonometric drawing, cutting layout
Baltic Birch plywood table top.



First, the steel was bent mechanically using a break, then cut, ground and finished. The cutting of steel was achieved in two ways. A shear was used by the supplier in order to cut the twelve inch wide, one-quarter inch thick plate to a length of forty-three inches. A plasma cutter was used by the designer to carve the plate according to the geometric schemes. The rough edges left by the plasma cutter were then ground and filed smooth. The work was concerned with the refinement of the piece, rather than revealing every raw mark made by the tools.

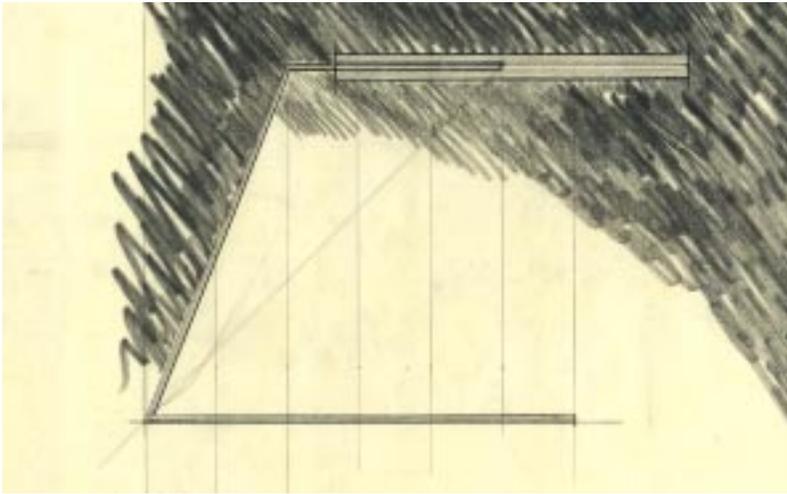
“Table 3:1” the steel was sandblasted, then permitted to rust, but has since been sandblasted again. Gun blueing was used on the “hammerhead”, darkening the steel with a chemical finish. This finish has proven durable, yet the piece must be free of moisture or rust will build up. It should be oiled, if that is not possible a coat of clear lacquer.



Hammerhead, plan drawing, A36 steel folding and cutting layout

The Baltic Birch plywood was rough cut to approximate dimensions, then glued using a commercial strength glue. After the laminated piece had cured the wood was formed with a number of tools. A table saw was used for primary cuts. A sabre saw and router were used for more detailed work, including the curves of the table top. Similar to the steel, the wood was sanded to give it a smooth surface to take the finish, a satin polyurethane.

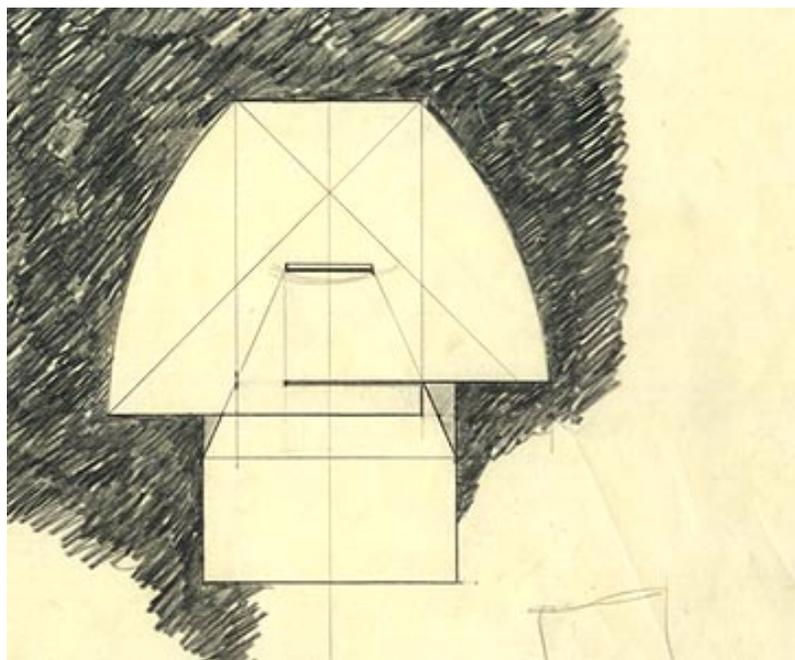
The work here with materials was the primary reasons that I chose to pursue a masters at Virginia Tech. This connection with the materials of our discipline is an unparalleled experience for students.

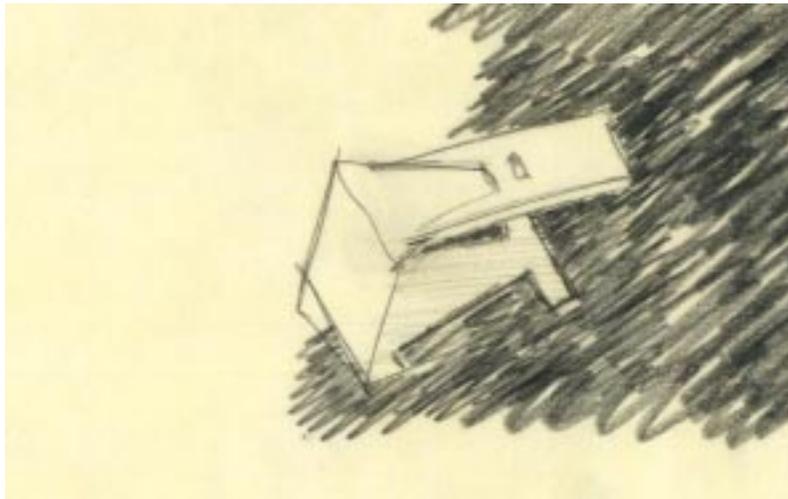
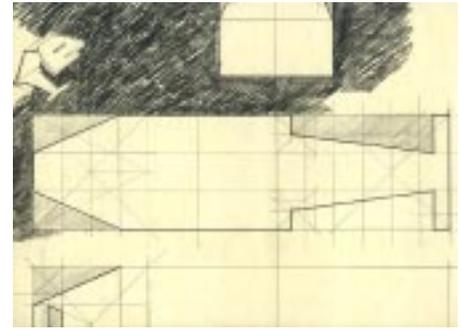


“Hammerhead” section and top view.

The proportions of the tables were based upon ideal geometries. “Table 3:1” uses that ratio in the proportion of the top, as well as the number of cantilevers to the single top. The table fails to use that number as consistently as may be desired, (it was named after the fact) but that may give clues to its next generation. The steel was separately considered, using a three inch module and the masons square on top of the twelve inch wide plate width.

The “hammerhead”, introduces a golden section to the table top. The golden section is layered, reversing itself in order to scribe the curving edges. The carving of steel was reversed from “table 3:1” the material was taken from the edges rather than the center.





There are many layers of involvement in the development of a work. Within those multiple layers decisions are made based upon an assortment of grounds. Meaning, however open ended, depends upon decisions that must be made, a framework. Those decisions allow meanings to bleed through the matrix.

The furniture projects did not acquire the sorts of ideological reference that other Descendants were founded in. The resistance was thin, meaning that there were few and they were not deeply considered. For example, references to Iakov Chernikov are embedded in communist ideology, yet this sort of thinking was not brought into the fold. This work has little to do with larger picture of furniture design and mass production, it carries no reference to culture. The pieces are “cool stuff” which is in large part what I learned to do at Kent State. As they stand they have formal beauty and are innovative objects. Beyond the Descendants (my Project) they have little relevance. But how important is it for a design to have relevance beyond the material dimension and the individual designer/maker? That is among the fundamental questions that I am struggling with.