CRADLE SLING CHAIR

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IAD 332 Spring 2024: Furniture Design and Construction

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RESEARCH

Exploring the importance and impact of dynamic seating for users with ADHD

Improved Focus and Attention

Ziereis, S., & Jansen, P. (2015) showed that physical movement, such as shifting posture, can help maintain working memory and executive functioning in children with ADHD

Hartanto et al. (2016) found that children with ADHD who engaged in "fidgeting" movements performed better on cognitive tasks compared to those who were required to remain still

Enhanced Comfort and Wellbeing

Jeong, B. Y., & Yoon, A. (2014) found that ergonomic seating that allows movement improves posture and reduces physical discomfort, indirectly benefiting cognitive performance

Fedewa & Erwin (2011) showed that seating options like stability balls, which allow micro-movements, contributed to increased engagement and reduced disruptive behaviors in students with ADHD

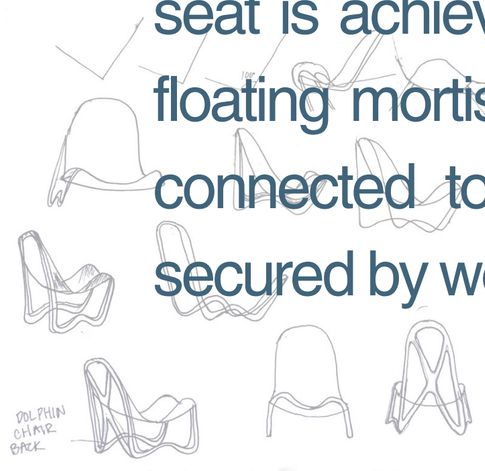
Supports Self Regulation and Sensory Needs

Dunn & Bennett (2002) suggests that seating designed to accommodate movement helps individuals with ADHD manage sensory processing challenges, leading to better emotional regulation

Pfeiffer et al. (2008) indicated that sensory-friendly seating improves classroom behavior and engagement among children with ADHD

CONCEPT STATEMENT

The Cradle Sling Chair embodies the philosophy of comfort as a dynamic position, and is designed with the ADHD user in mind. Recognizing the discomfort inherent in prolonged sitting postures, the design champions fluidity and flexibility in movement, encouraging users to easily transition between positions. The sling chair's generously proportioned scale and spacious sling seat is achieved through the curvilinear cross brace structural elements, with floating mortise and tenon joints from steel rods and Baltic birch. The seat is connected to the frame by leather loops that fit snugly through slots and secured by wooden dowels, making the seat removable/washable.



CONCEPTUAL DEVELOPMENT

Guiding Principles:

Dynamic position

Linear repetition

Leather materiality

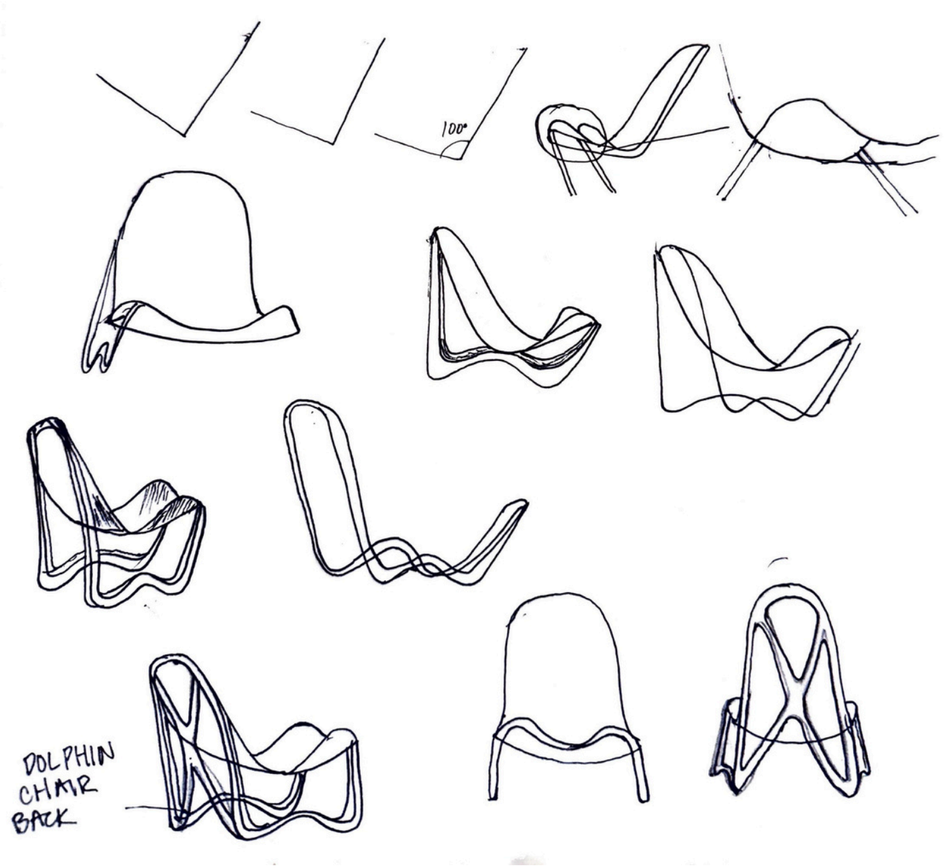
Nestling element

Slot element

X-cross bracing form & structure

Materiality- leather sling

Curvilinear edges

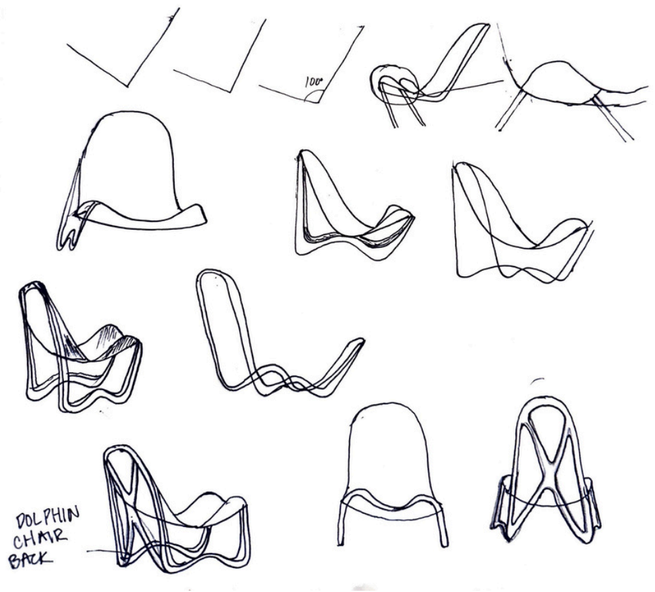


BUTTERFLY CHAIR: CASE STUDY

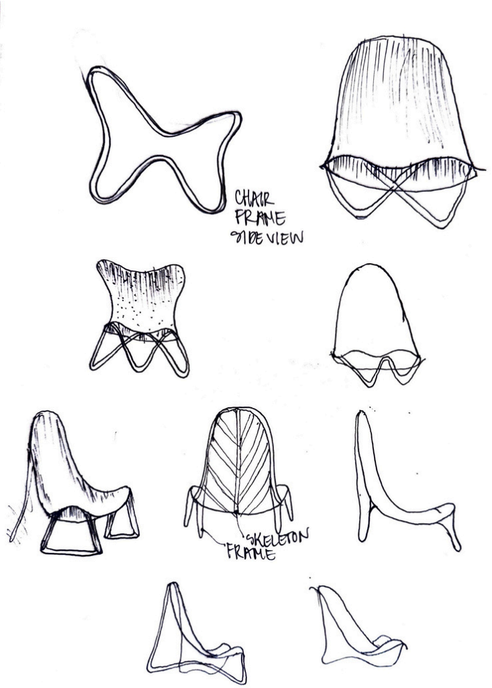
Category: Lounge Seating
Designer: Antonio Bonet, Juan Kurchan, and Jorge Ferrari-Hardoy
Year Designed: 1938
Materials: Tubular steel, vegetable tanned leather
Dimensions: 32.5" W x 35.5" H x 30"D

Takeaways: materiality, seat connection, enlarged dimensions, dynamic position

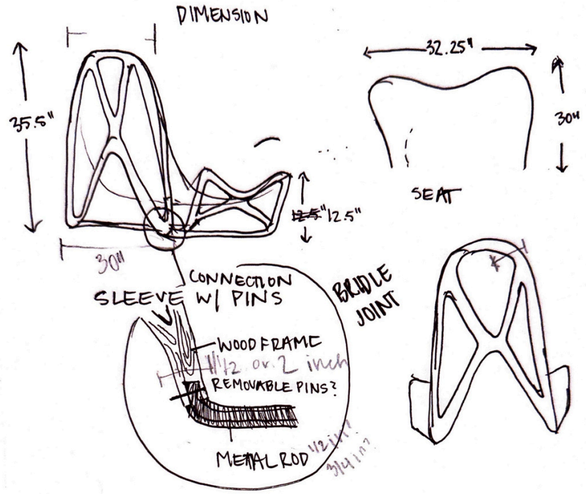
PROCESS SKETCHES



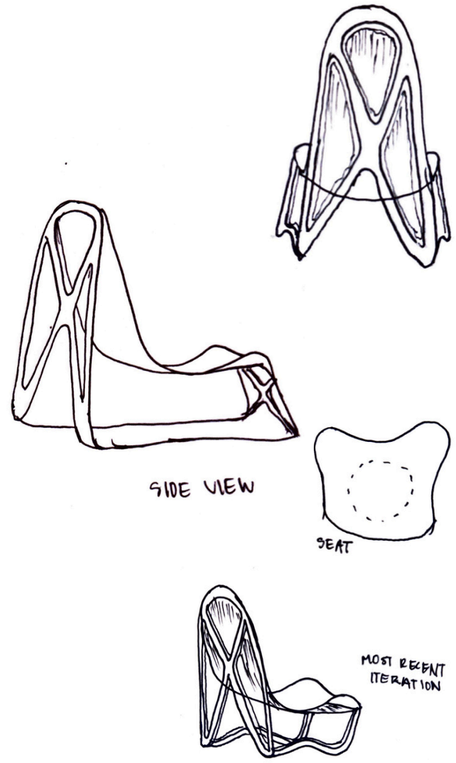
initial form exploration



further form exploration



connection & joinery exploration



final form exploration

PROCESS MODELS

Initial draft model- exploring connections, forms, and dimensions

Secondary draft model- exploring connections, forms, and dimensions

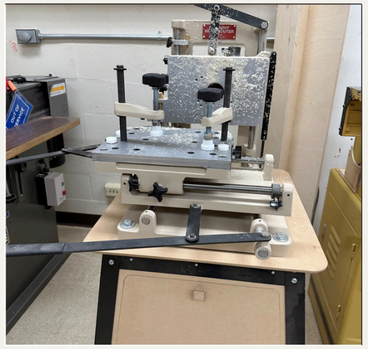
Final draft model- revisions for a wider seat angle (100 degrees), raising seat height (18"), intentional material connection

PROCESS PHOTOS(FABRICATION PHASE)

after finalizing cad files, cnc pieces were cut

cnc piece gluing to reach desired thickness

fabric selection



using router machine + router to curve edges and make joint

ensuring joint was flush and frame is properly balanced

using AAE metal shop to patina steel rods

patina steel rods to achieve desired steel finish

making pattern for suede sling to ensure proper draping & minimize error

ensuring cut piece of suede is properly sized

sewn sling. double layered and triple stitched

PROCESS PHOTOS(FABRICATION PHASE)

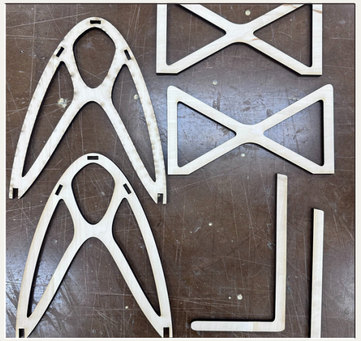
18 hours of sanding

epoxying frame with clamps

attaching sling to frame and finalizing connections

after adding danish finishing oil, completed chair is ready to ship

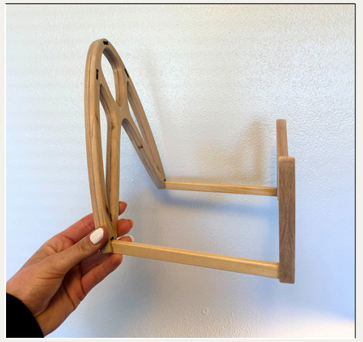
cradle sling chair & skeleton table at IDI Chair Affair



laser cutting final as-built model

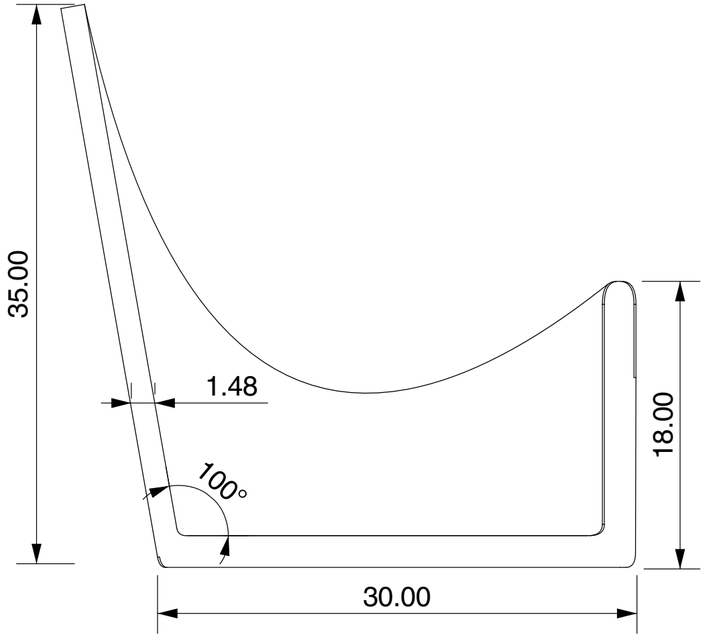
sanding final, as built model to remove laser cutter marks

adding danish finishing oil to final, as built model

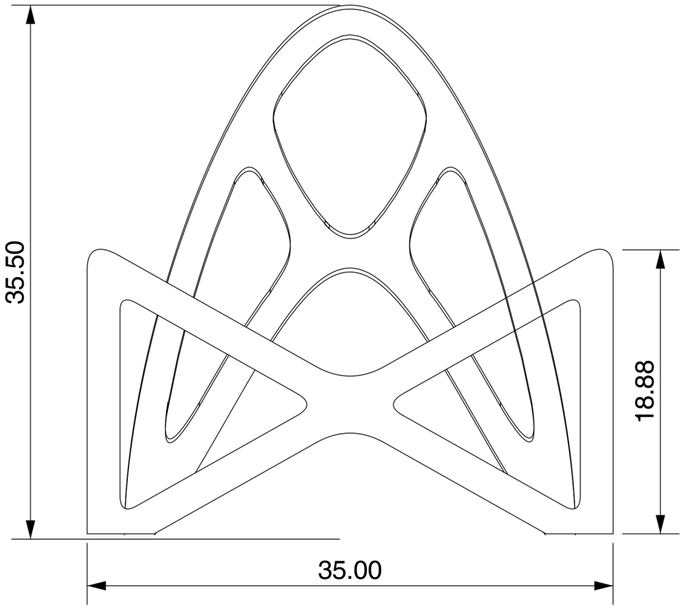


gluing final, as built model

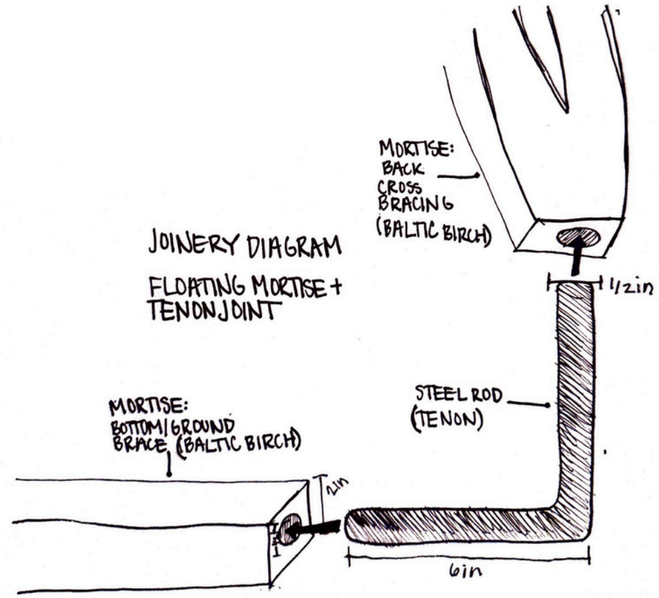
CONSTRUCTION DOCUMENTS



side view

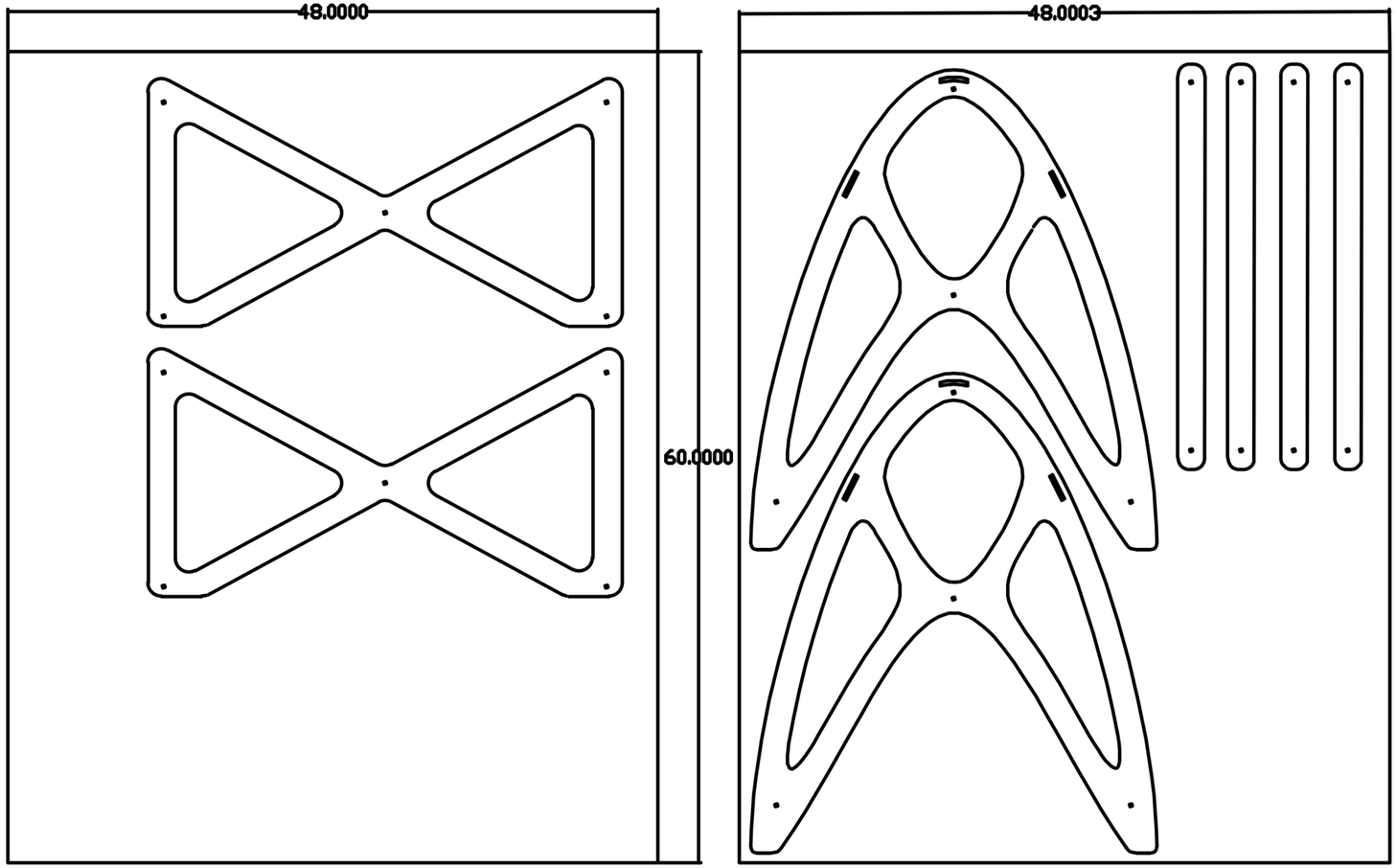


front view



joinery diagram

CONSTRUCTION DOCUMENTS



cnc cut sheets

PRODUCTION COSTS

2 Baltic Birch plywood sheets at $98 each= $213

Gas cost to Spokane to pick up wood= $65

Soap wood finish= $7

Suede fabric= $45

Shop labor cost of $50/hour for 60 hours= $3000

Total production cost= $3330

FINAL MODEL

Final, 25% scale as-built model showing connections, leather and suede materiality, double stitching, and finish oil.

TEAM NESTLE COLLECTION

GUIDING PRINCIPLES & CONNECTIONS

LINEAR REPETITION
DYNAMIC POSITION
LEATHER MATERIALITY
NESTLING ELEMENT
SLOT ELEMENT
X-CROSS BRACE FORM
MATERIALITY: SUEDE SLING
SLING & BALTIC BIRCH
CURVILINEAR EDGES

Renna’s “Skeleton Table”.

GALLERY

GALLERY

RESEARCH CITATIONS

Dunn, W., & Bennett, D. (2002). Patterns of sensory processing in children with attention deficit hyperactivity disorder. OTJR: Occupation, Participation and Health, 22(1), 4–15.

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Hartanto, T. A., Krafft, C. E., Iosif, A. M., & Schweitzer, J. B. (2016). A trial-by-trial analysis reveals more intense physical activity is associated with better cognitive control performance in attention-deficit/hyperactivity disorder. Child Neuropsychology, 22(5), 618–626.

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