Team Proodos

Engineering Design II:

Conceptualization and Realization

Our Goal

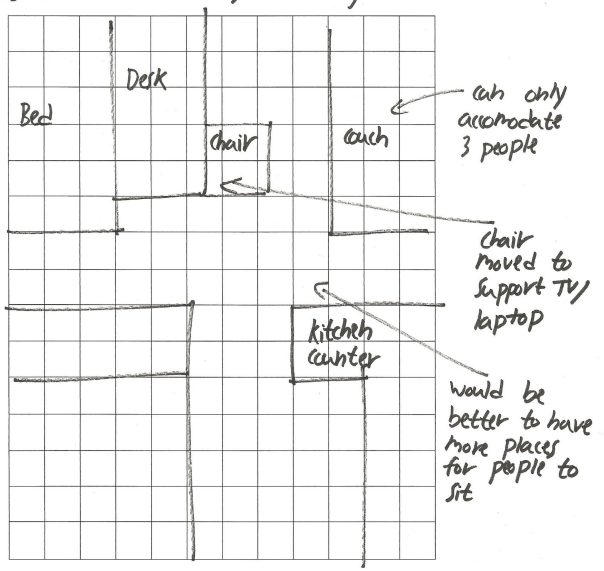
Develop space-saving adaptive furniture for small living spaces located in highly urbanized areas of the world.

Outline

- Concept Definition
- Solution Exploration
- Concept Selection
- Final Concept Development

User Research

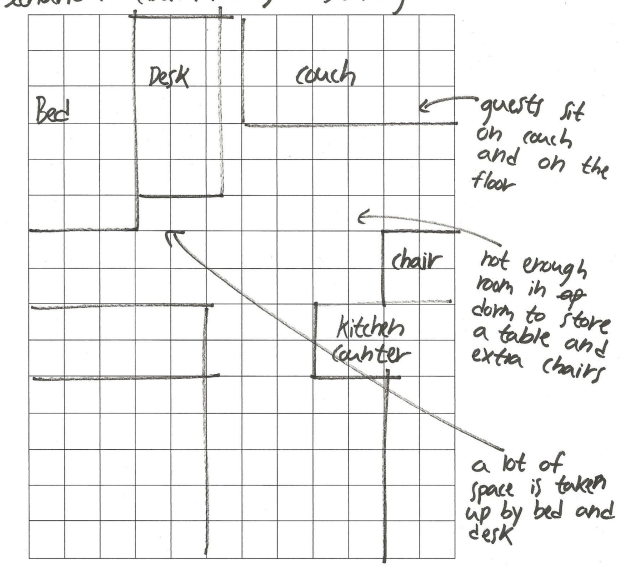
Senario 1 (Dorm room) Relaxing with Friends



-In order to relax and watch a movie with friends the ~~Desk~~ desk is pushed away and chair moved to support the laptop playing the movie

- Not enough room to seat more ~~people~~ than three people on the couch / extra people must sit on the floor

Senario 1 (Dorm room) Serving Dinner



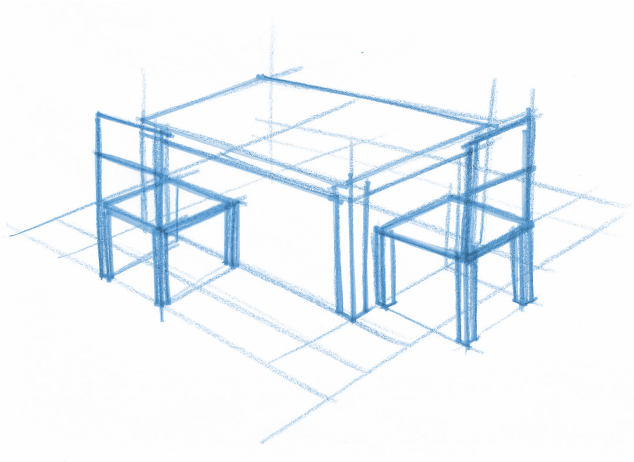
-In order to serve dinner to friends that are visiting it is necessary to push the desk aside, and rotate the couch inorder to make more floor space.

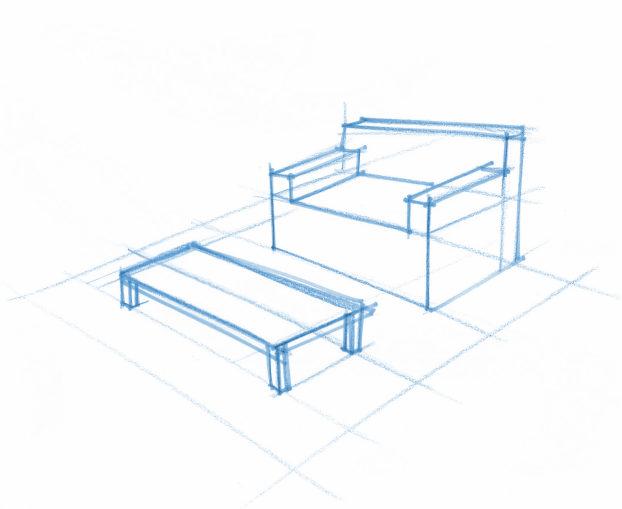
- During our research we also observed that people often did not have enough chairs to seat people as in this case

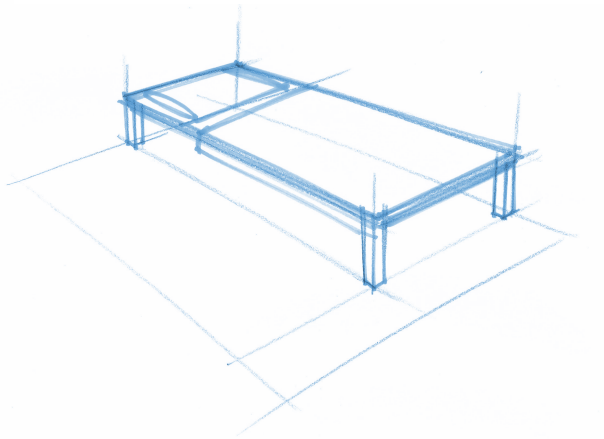
Functions

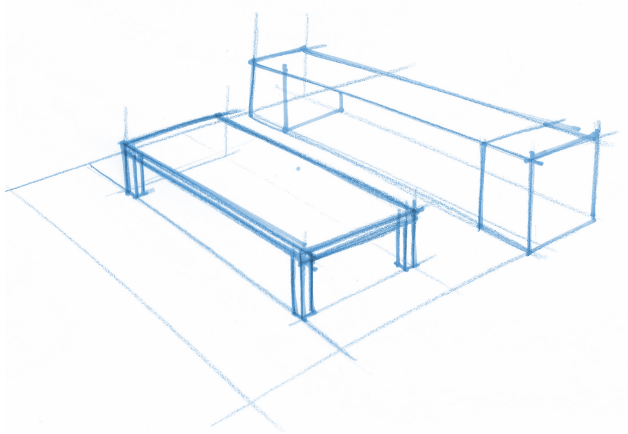
- Relax
- Serve Food
- Entertain Guests
- Entertain Kids
- Accomodate Guests

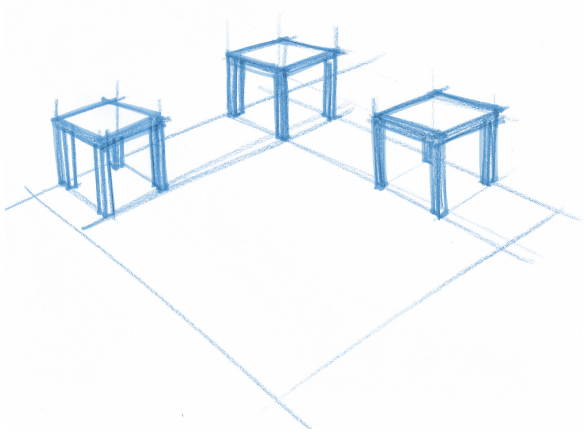
Configurations



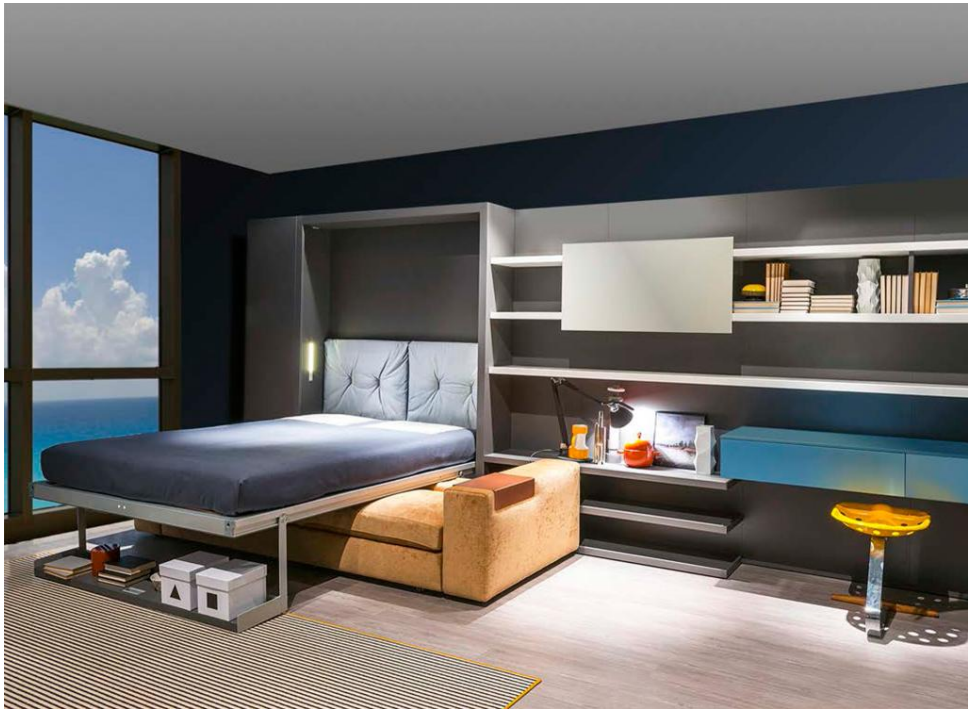


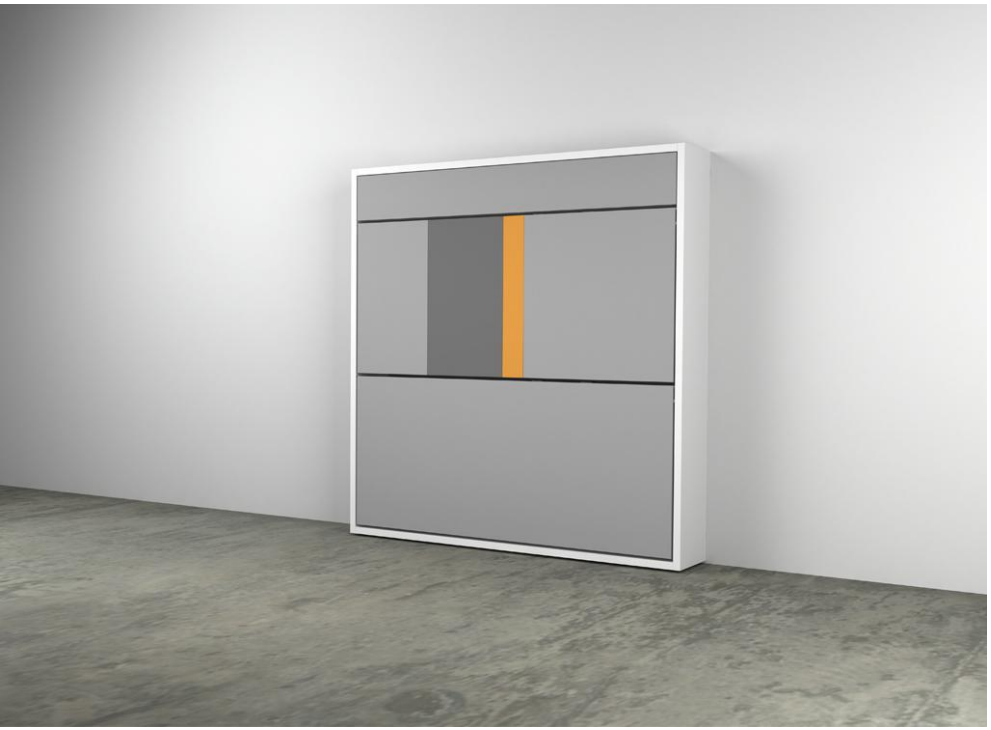






















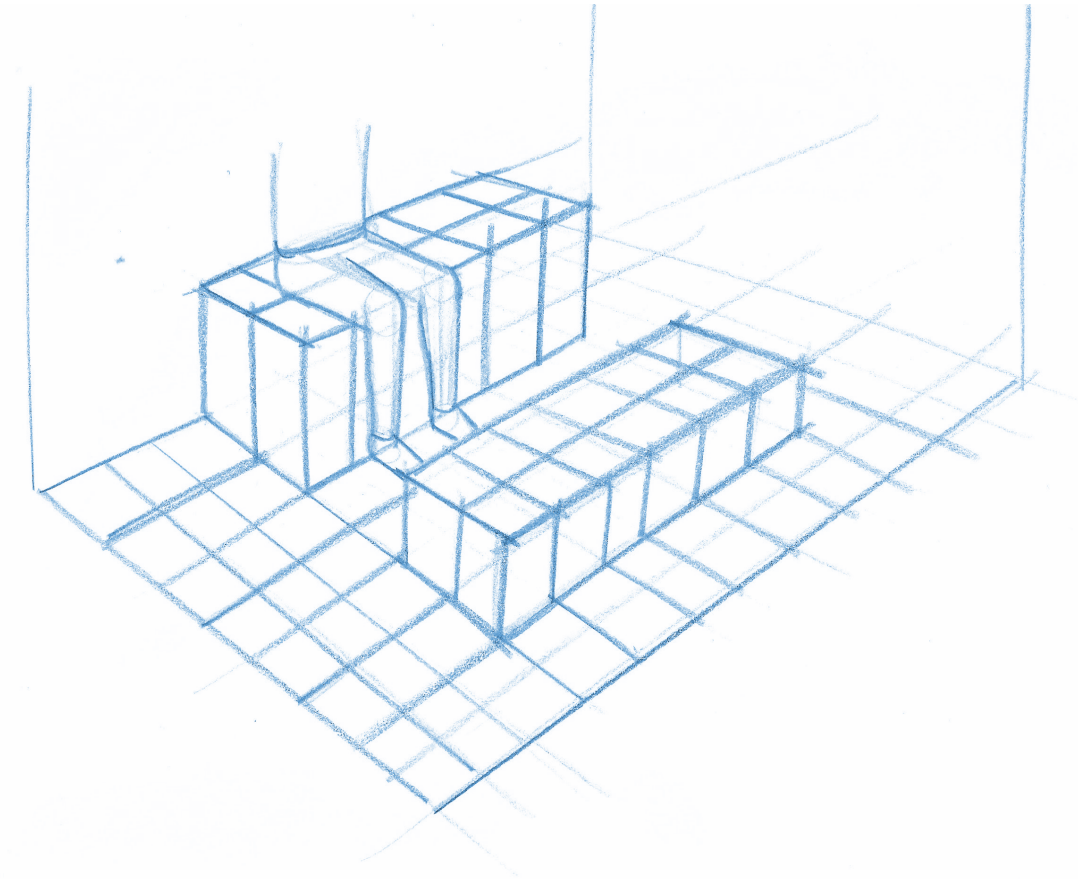



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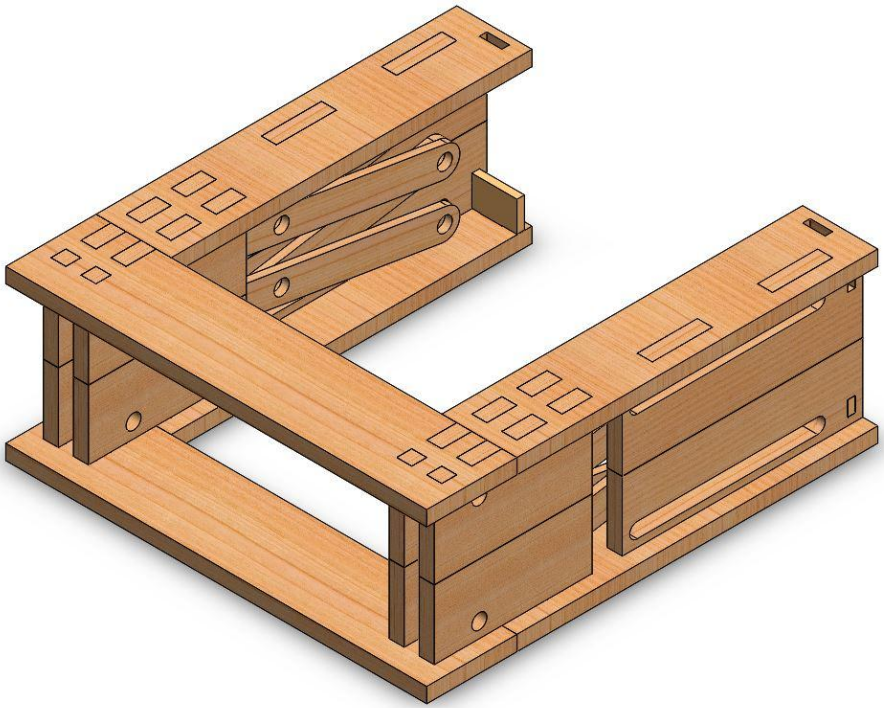


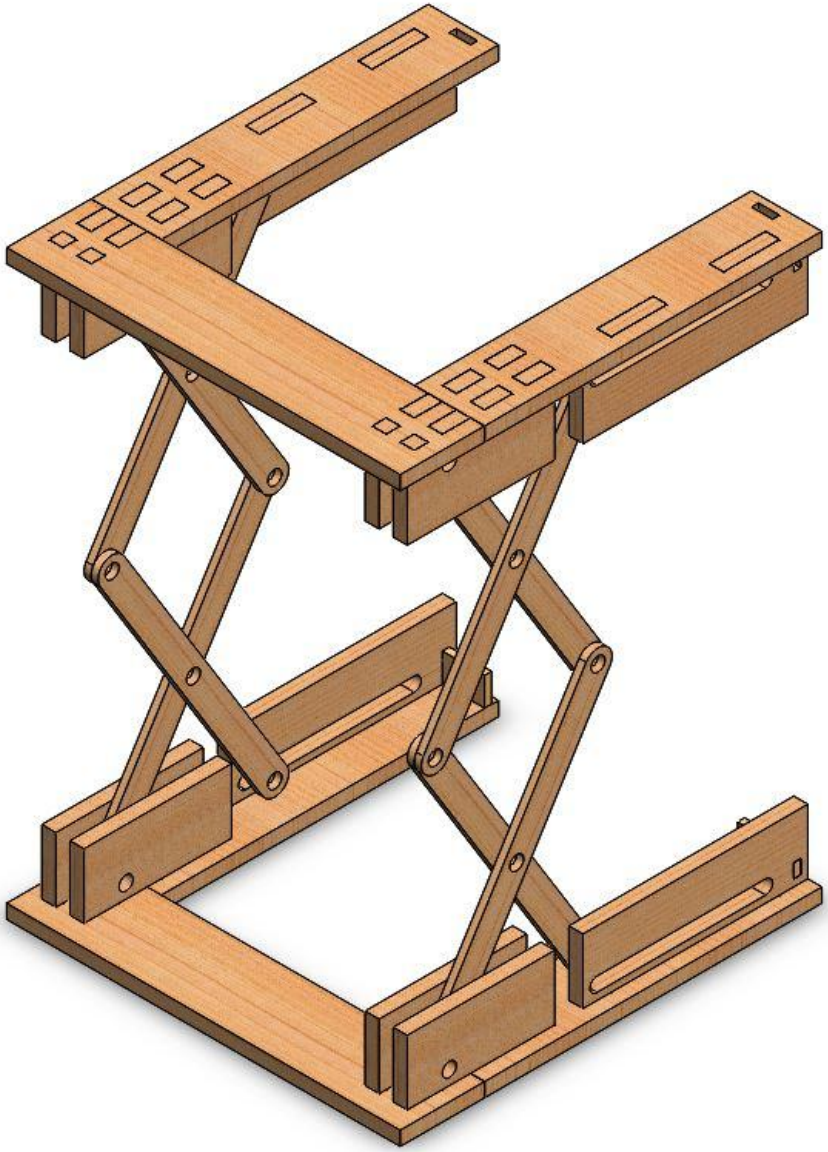


Possible Solutions



Prototype I





Prototype I

Advantages

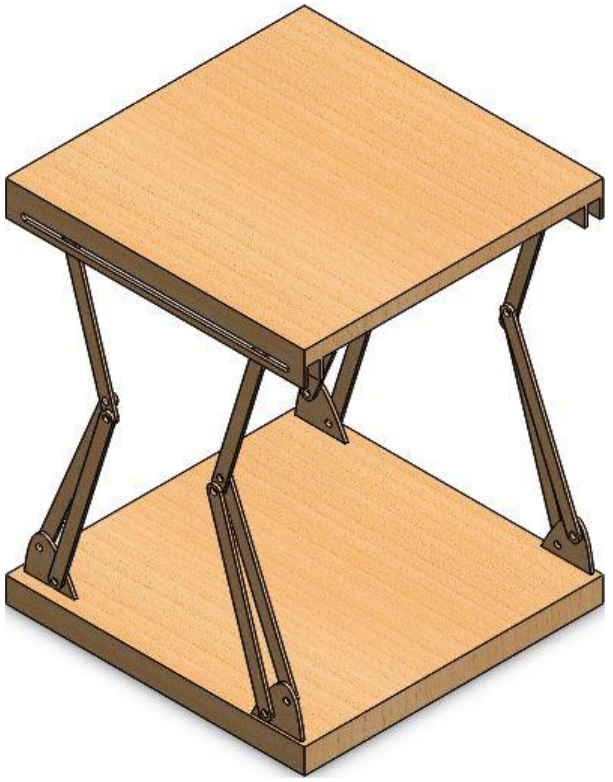
- Easily automated
- Extensively understood solution
- Highly stable

Disadvantages

- Dangerous exposed mechanism
- Largest collapsed volume

Prototype II





Prototype II

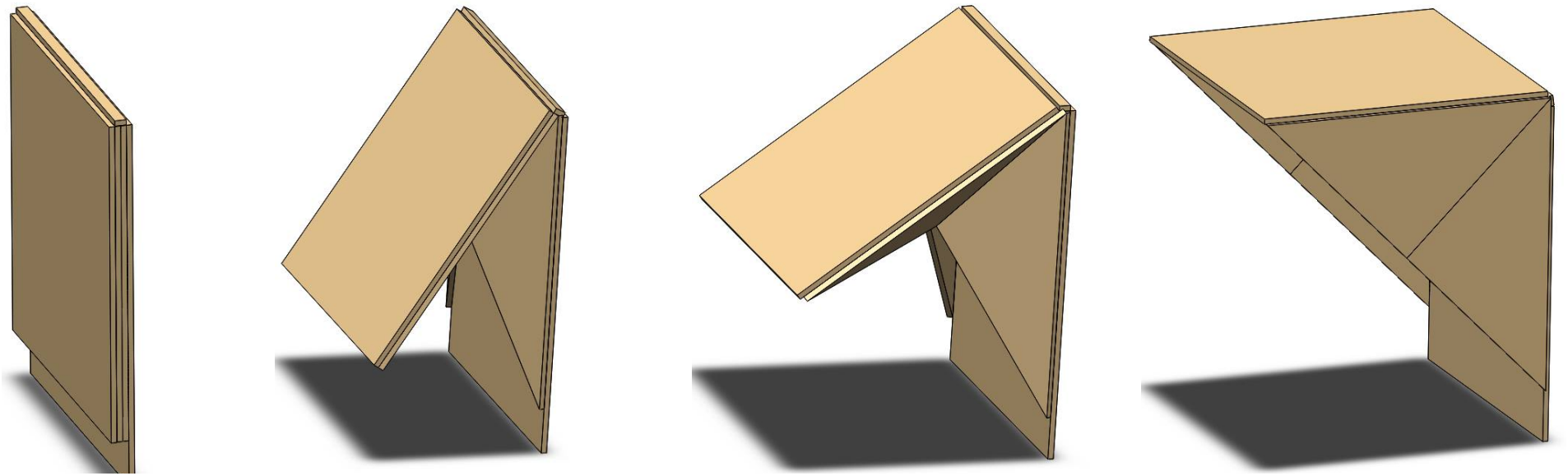
Advantages

- Minimal material use
- Reduction of exposed material

Disadvantages

- Constrained by two-bar linkage system
- Lack of stability

Prototype III



Prototype III

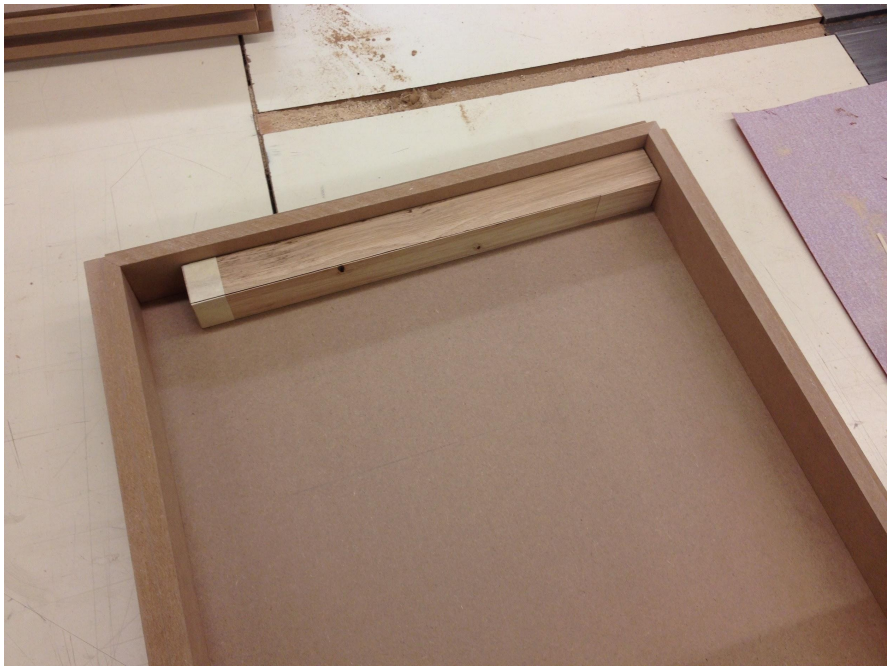
Advantages

- Space saving optimization
- Smallest collapsed volume

Disadvantages

- Stability
- Difficult to fabricate

Prototype IV





Prototype IV

Advantages

- Modular
- Highly adaptive

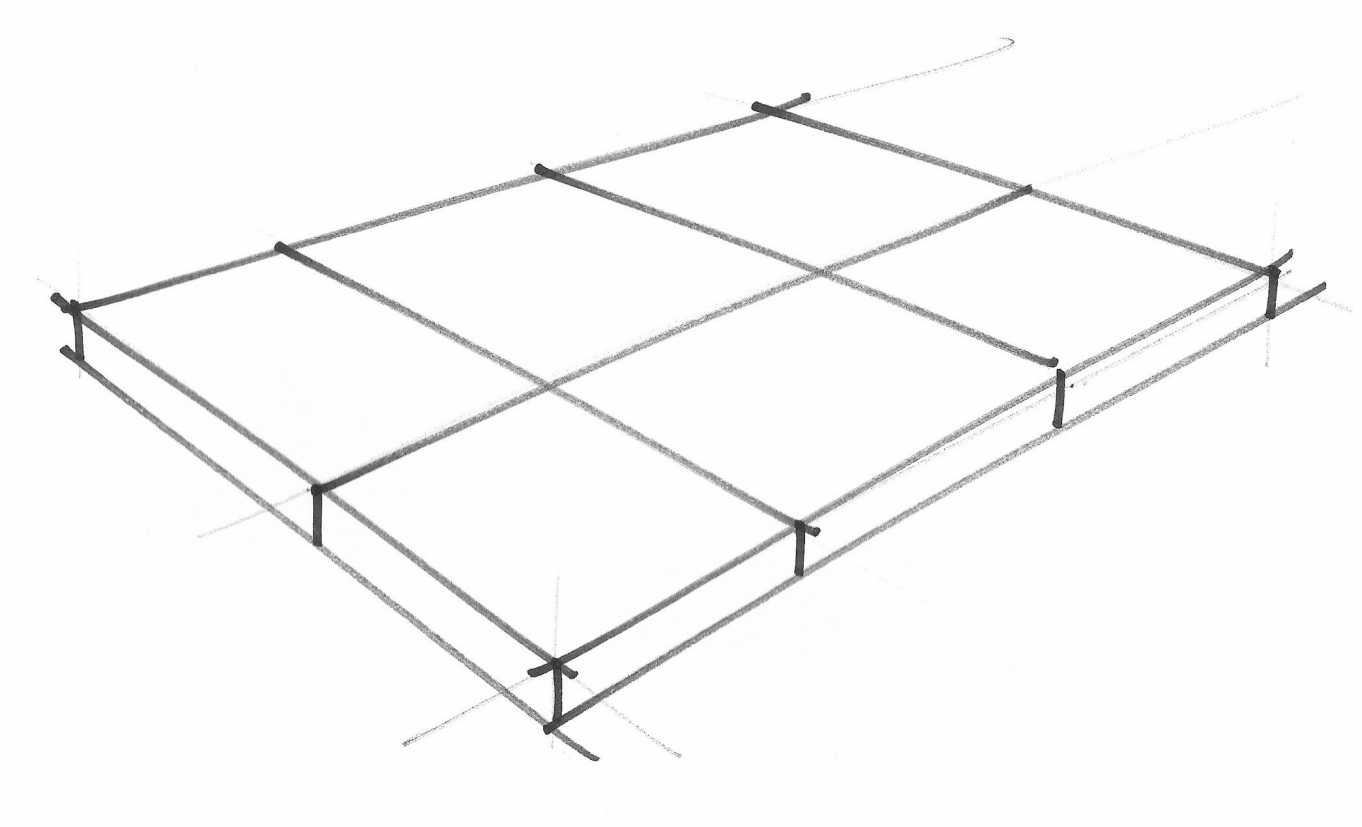
Disadvantages

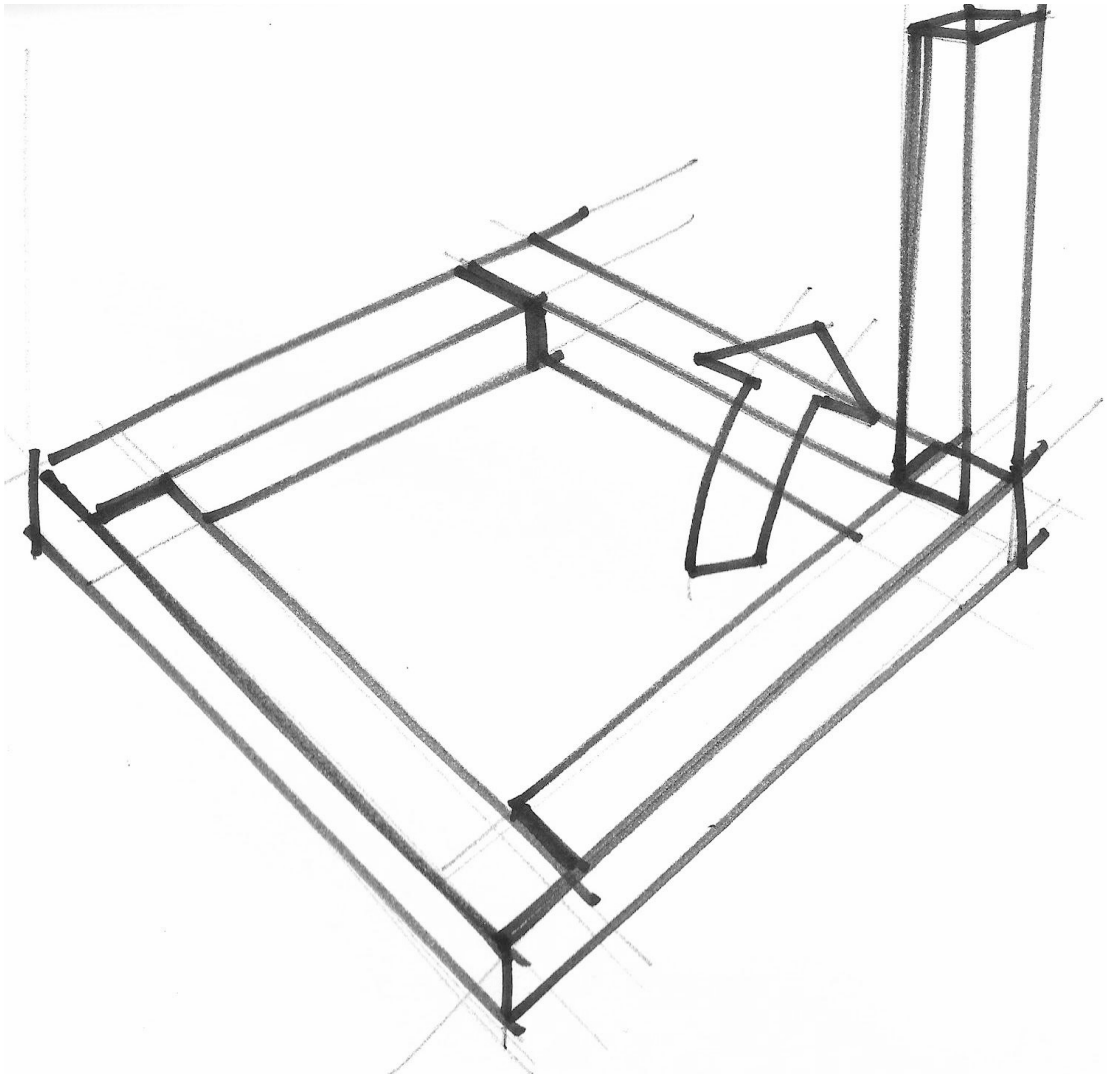
- Manual
- Not easily automated

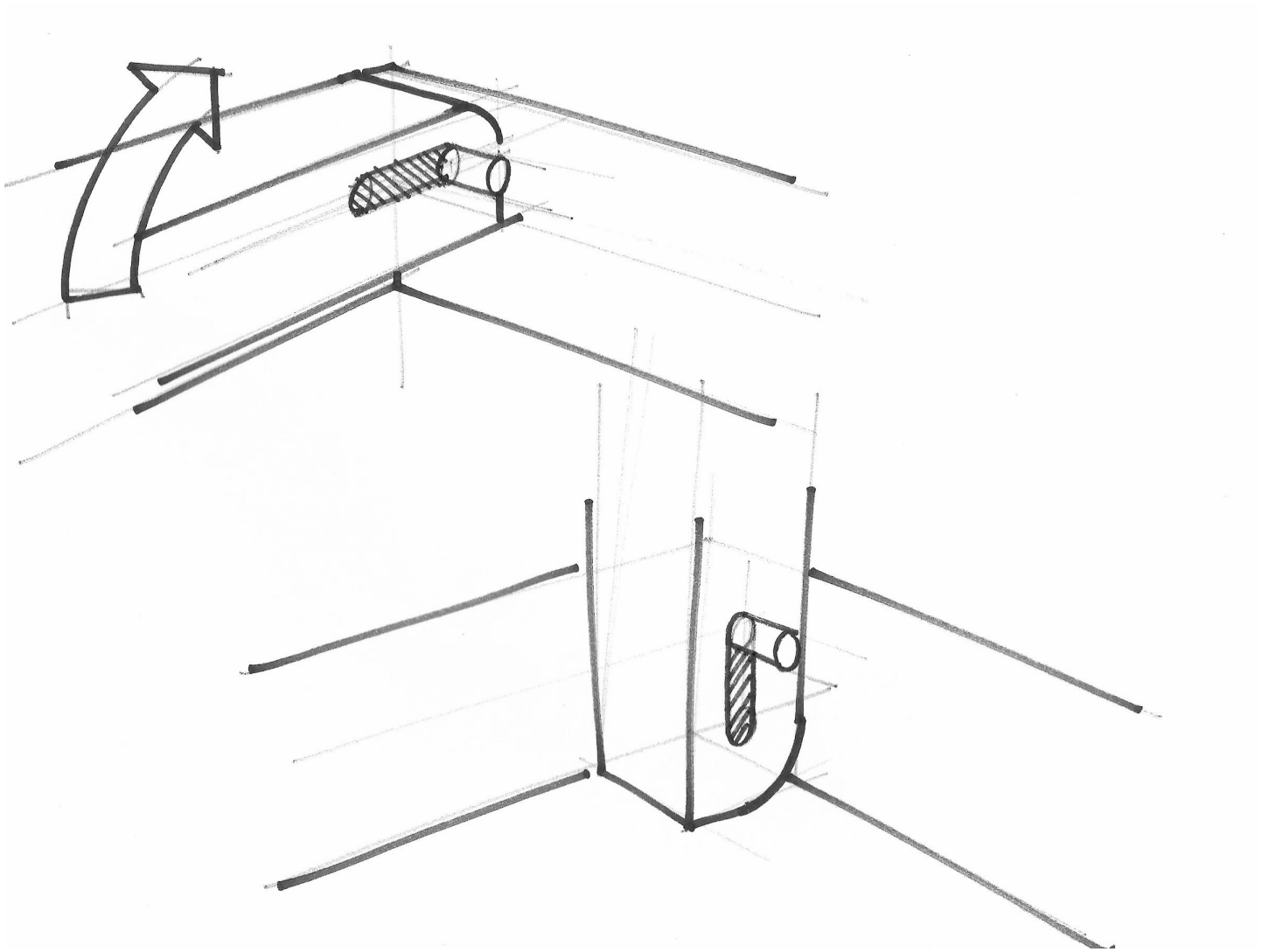
Selection Process for Final Concept

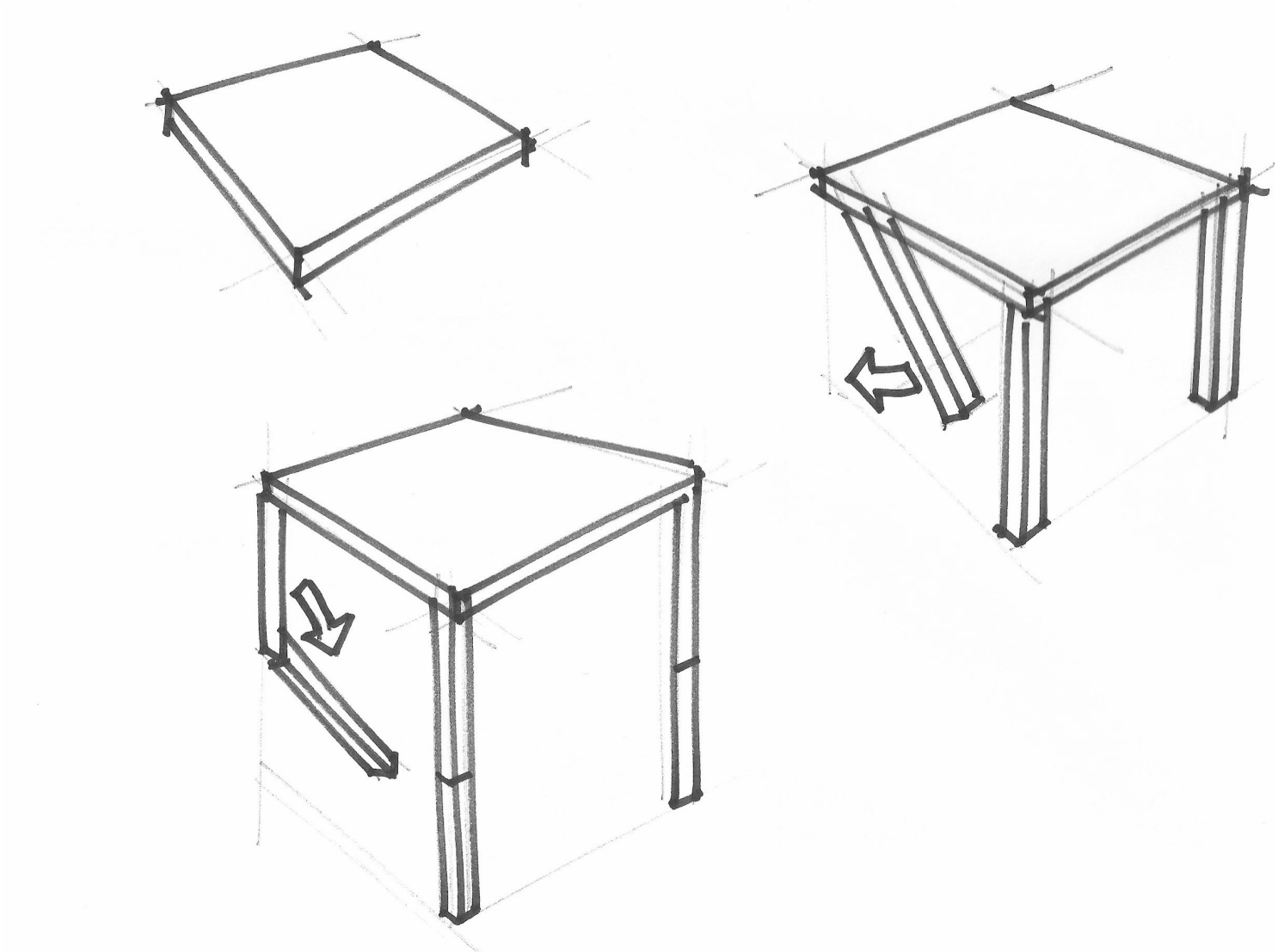
	Weights	Proto I	Proto II	Proto III	Proto IV
Ease of Manufacturing	0.1	6	6	3	6
Reliability	0.1	9	6	1	6
Safety	0.15	1	3	6	9
Aesthetics	0.15	1	1	9	6
Space Saving	0.1	1	3	9	6
Ease of Use	0.15	3	3	9	6
Versatility	0.15	3	3	1	6
Cost	0.1	3	3	6	6
		3.10	3.30	5.65	**6.45**

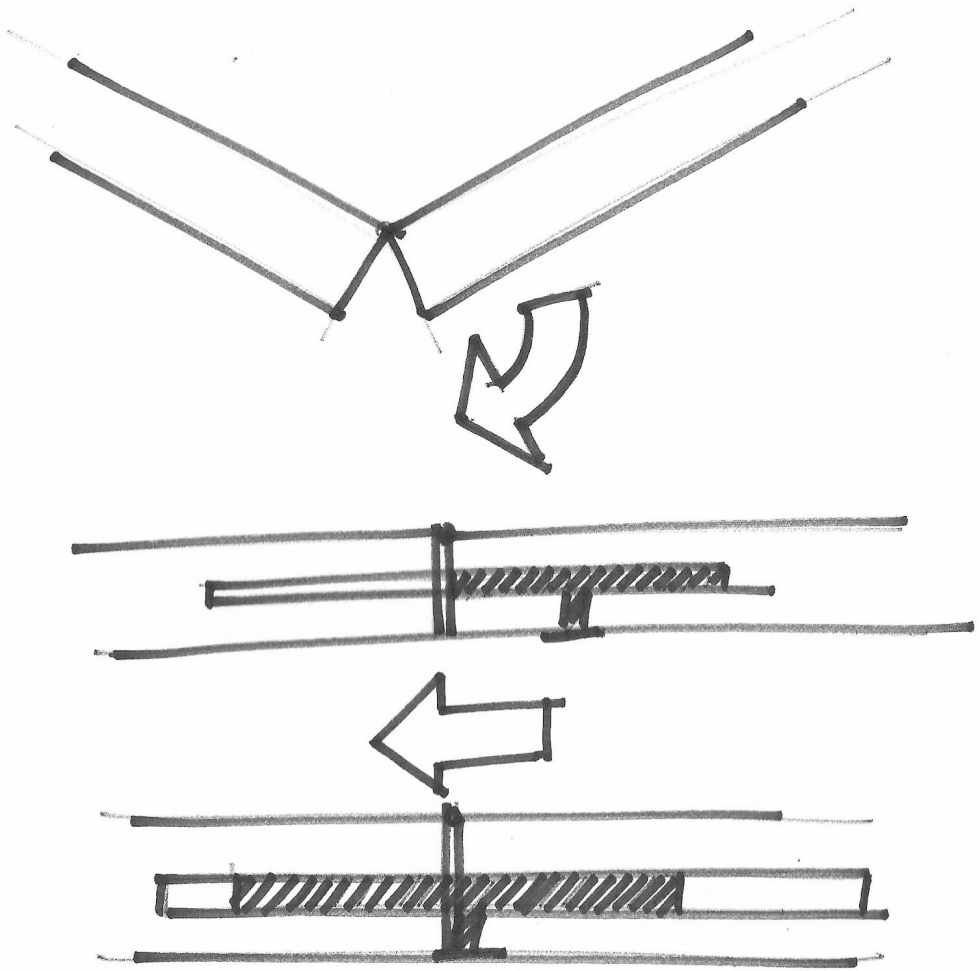
Development of Final Concept

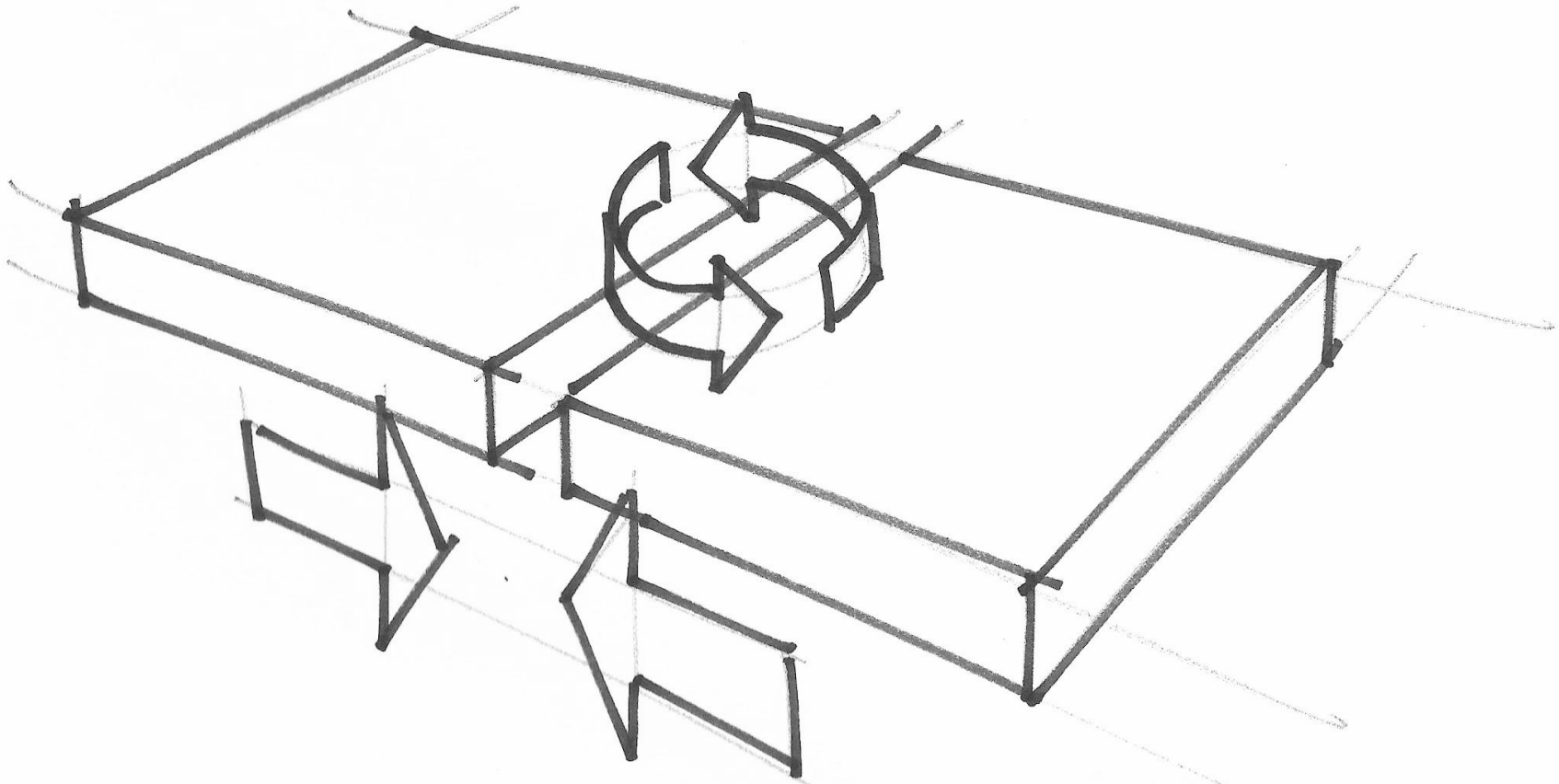


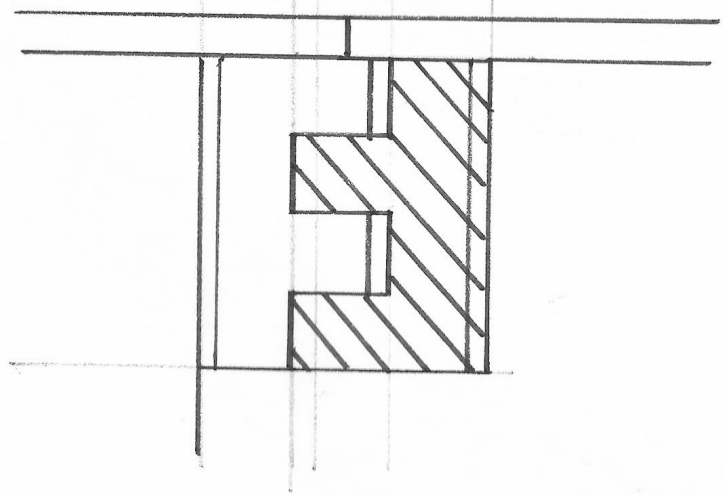


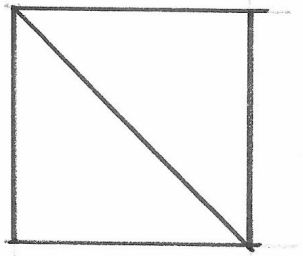


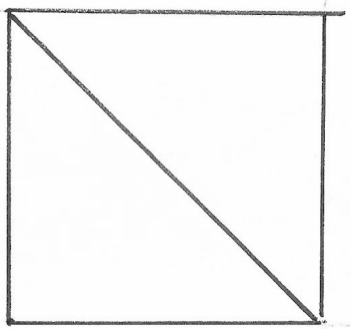


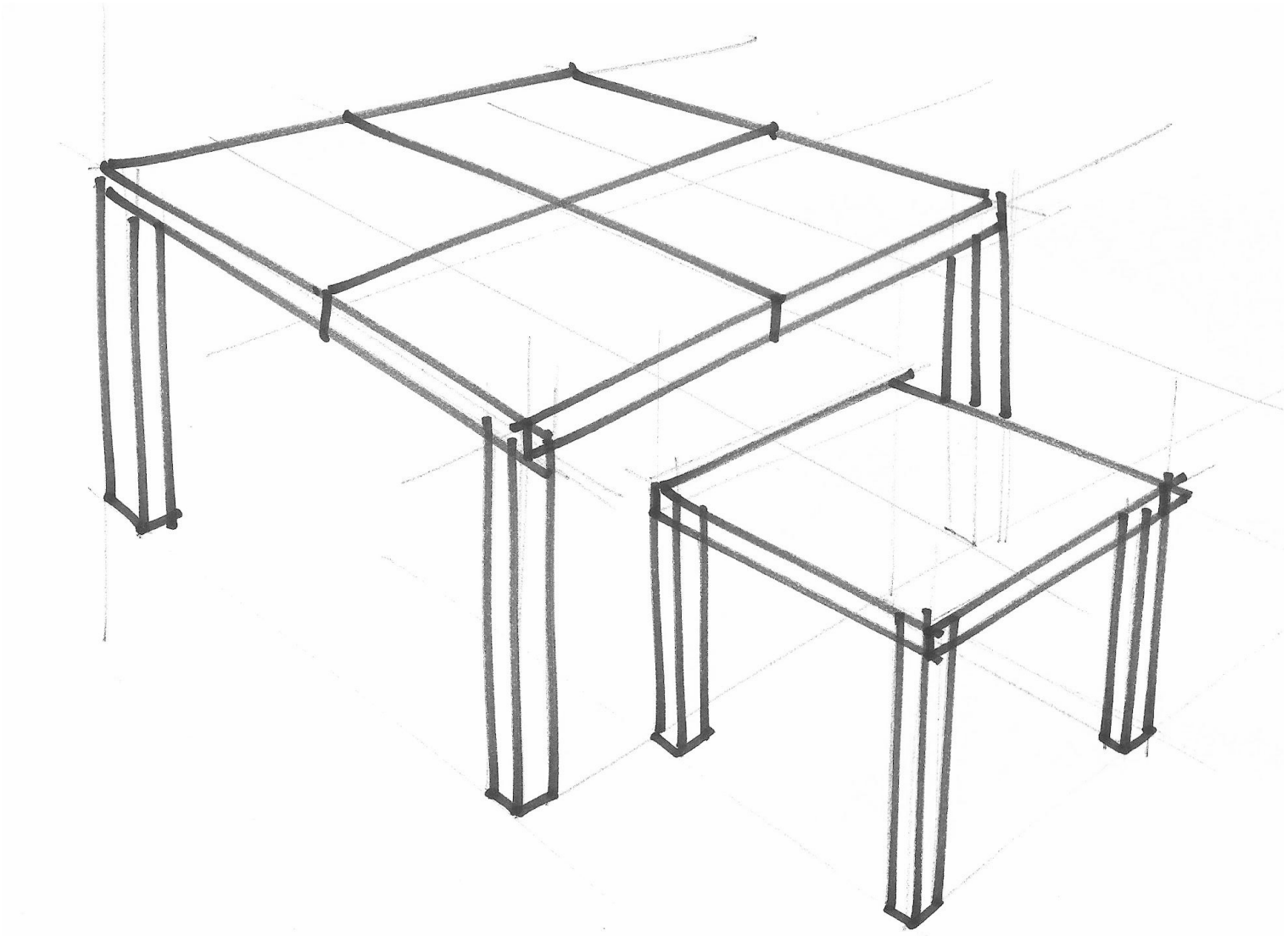


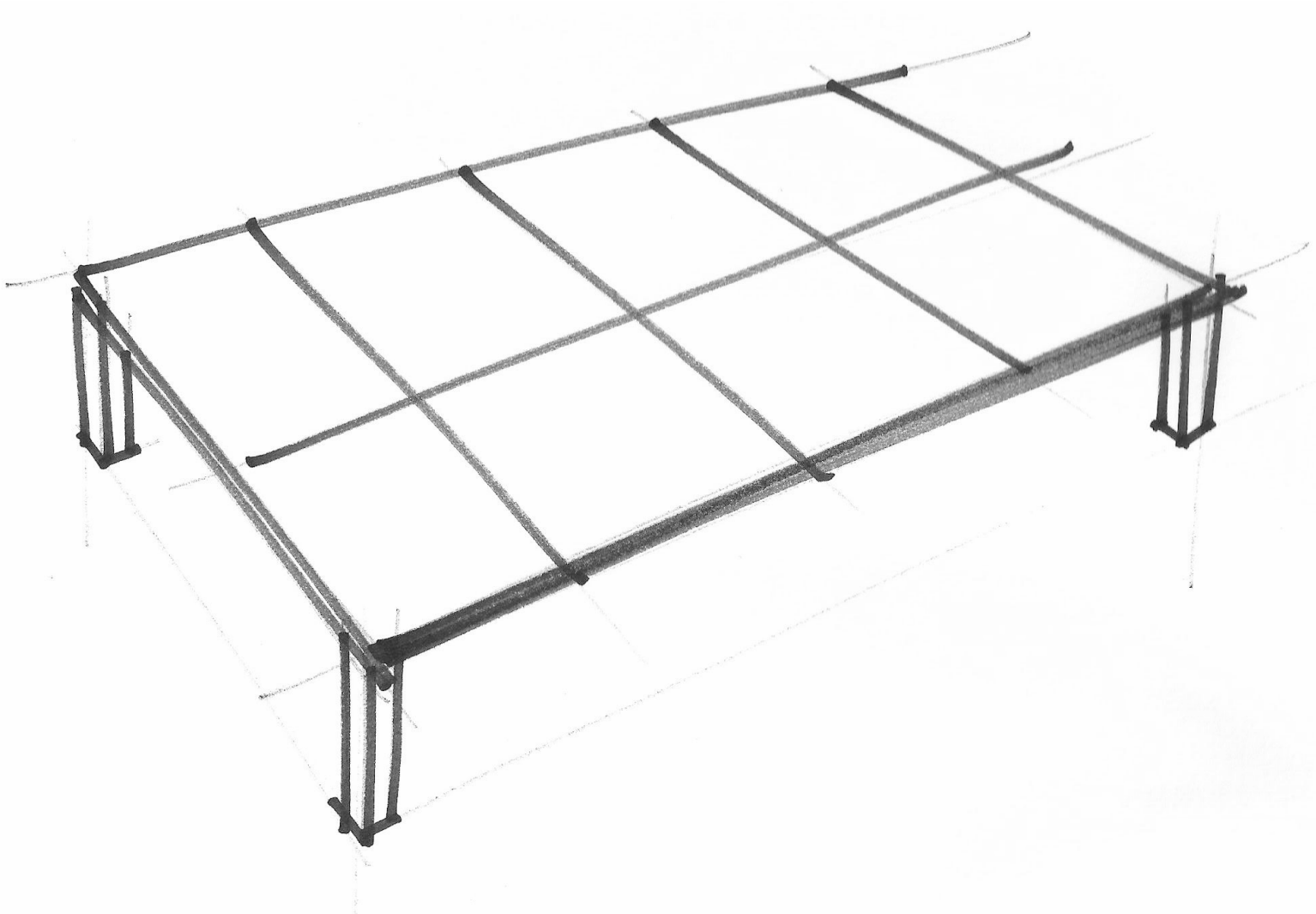


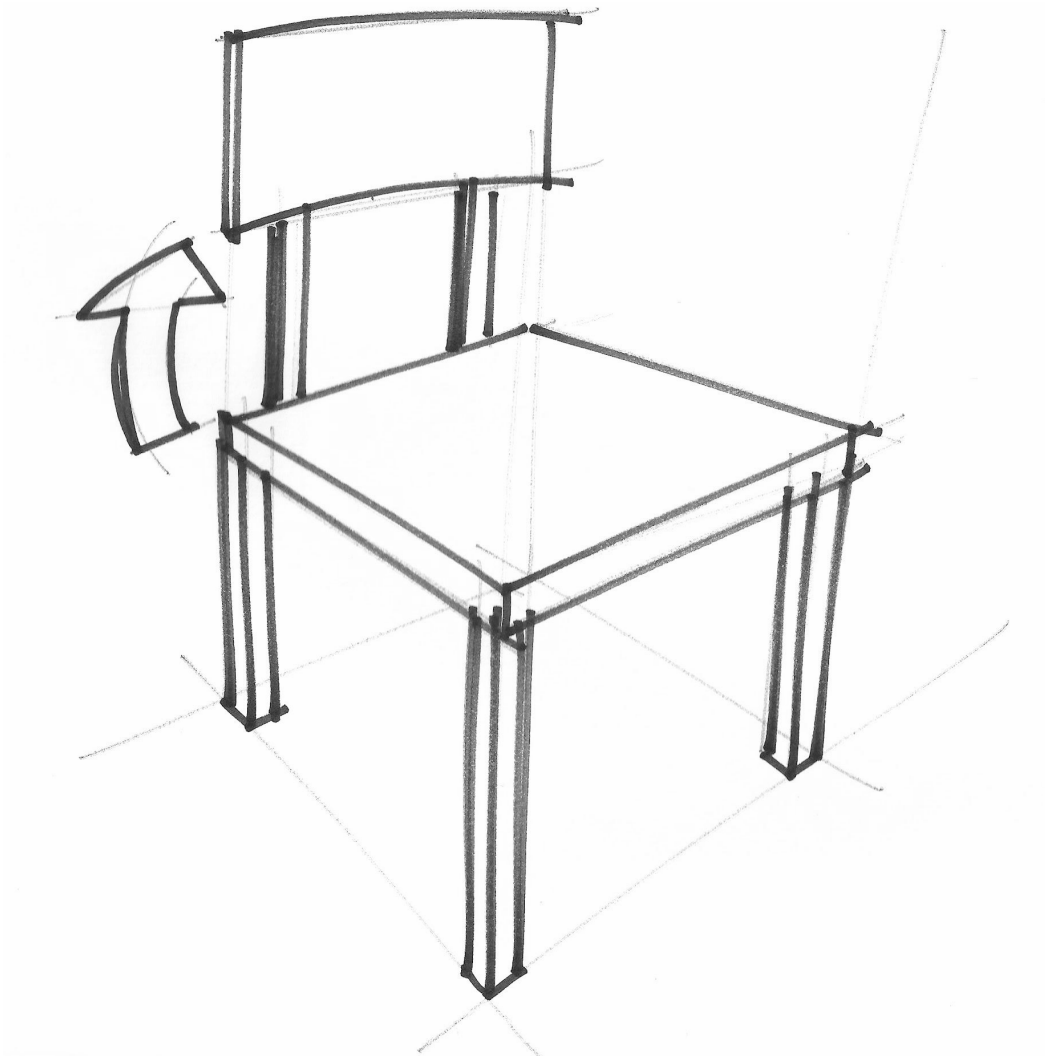


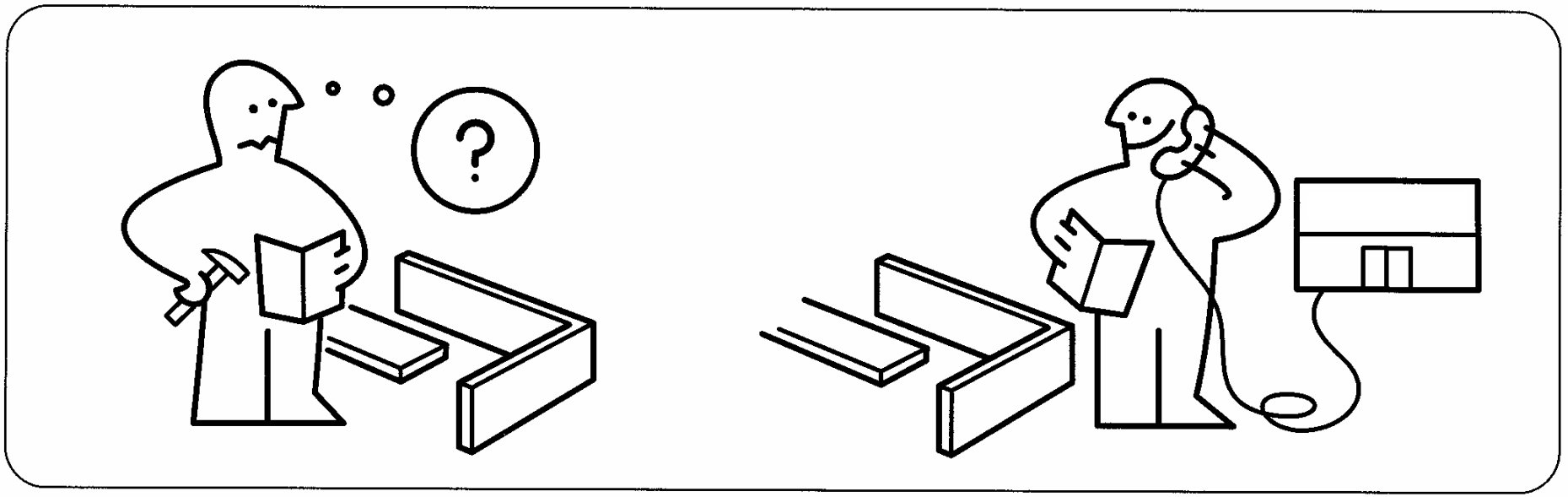












Feedback?