

# The Phoresy Pack: A Breakthrough in Ergonomic Design

The Phoresy Pack, an innovative ergonomic backpack designed by awardwinning multidisciplinary designer [Stepan Drunks](#), showcases the potential of parametric design in fashion and industrial applications. Crafted from a single sheet of CNC-milled and folded genuine leather, features a structure that dynamically adjusts to the volume of its contents, expanding and contracting as needed.



Drawing inspiration from the foldable tessellation patterns developed by mathematicians like Ron Resch and the computational design principles of architects such as Zaha Hadid, the Phoresy Pack marries traditional leather craftsmanship with modern technology. Influences also include pioneering designs like the Meiosis backpack by Davidi Gilad and the Solid Gray backpack.

The Phoresy Pack is produced using various types of natural cowhide leather. The back shell, made from blue-dyed leather, is milled on a CNC router to create precise crease patterns, while a layer of Spandex adds elasticity, enabling the bag to lay flat when empty. A special varnish gives the leather a glossy, watertight finish and ensures it adheres perfectly to the vacuum table during the milling process.

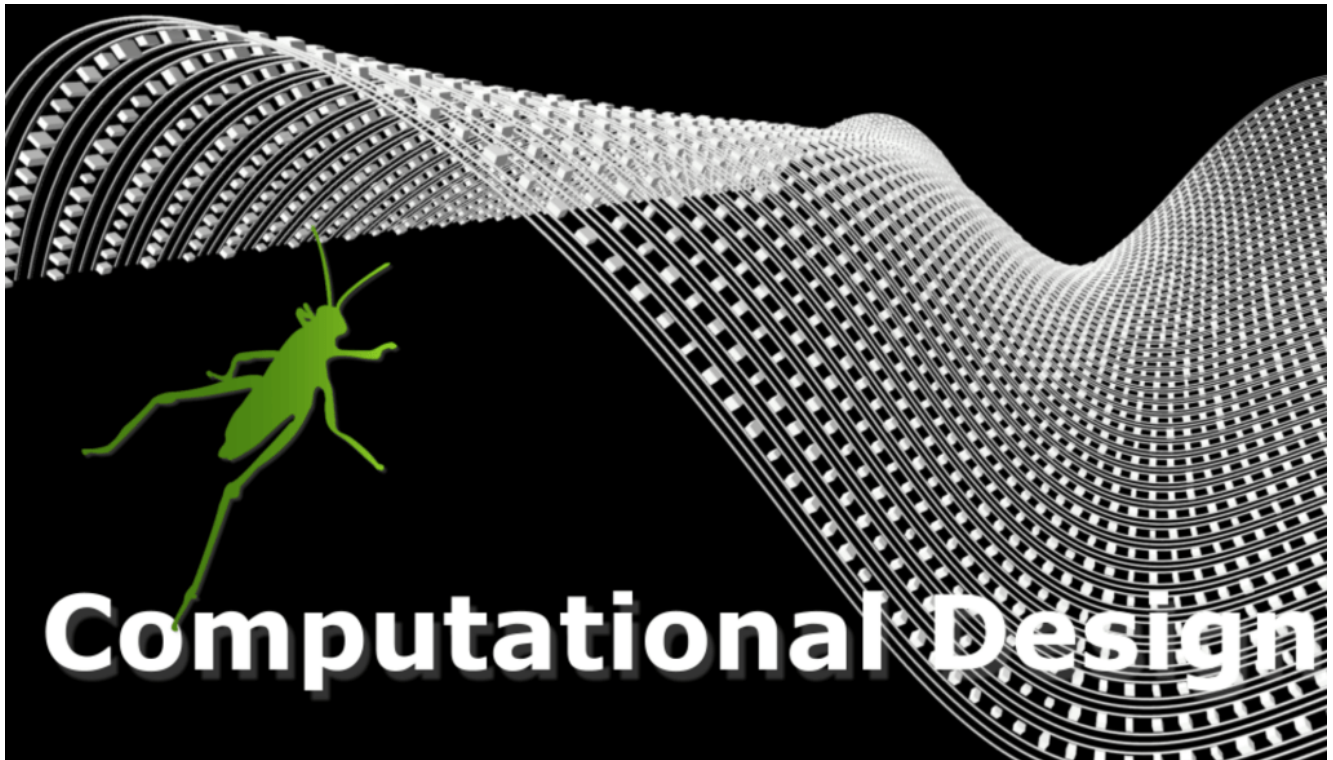




One of the key design challenges was the use of unconventional production techniques. While some processes adhered to traditional leatherworking methods, others, such as CNC milling cowhide leather, were developed specifically for this project.

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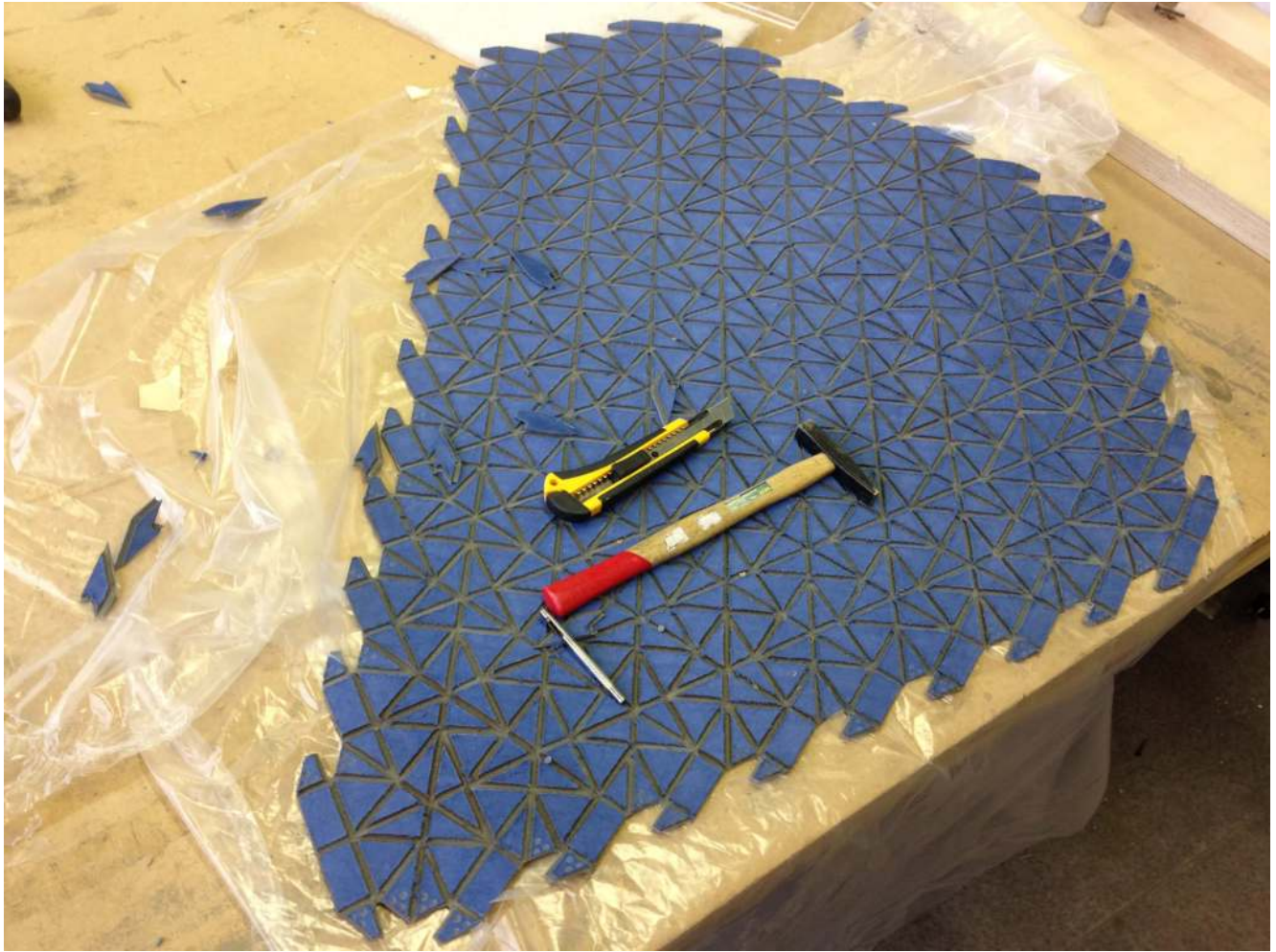


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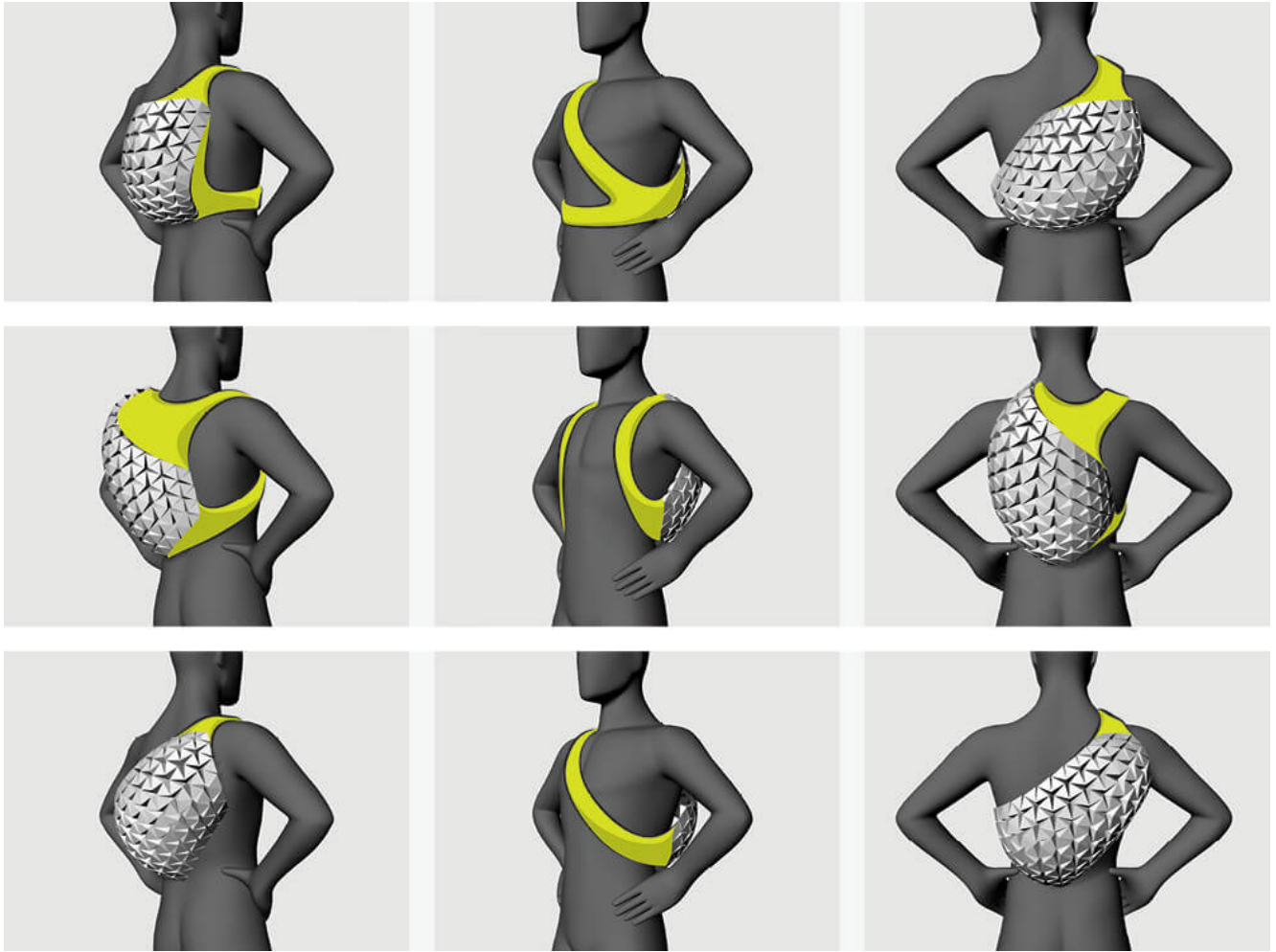
[COMPUTATIONAL DESIGN WITH GRASSHOPPER](#)

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The design's most distinctive feature—a backside crafted from a single leather sheet—required a highly iterative prototyping process, as any manufacturing defects necessitated starting over. The use of [Grasshopper](#) was instrumental in generating the backpack's overall shape and simulating the leather's folding and deformation.



Despite its sophisticated design, the Phoresy Pack remains user-friendly, featuring a single large compartment that naturally adjusts to the contents' volume. It measures approximately 500 x 320 x 200 mm, offering a total volume of 15 liters, and compresses to a smaller size when empty.



Developed as Stepan's degree thesis, the project debuted at the British Higher School of Art and Design's End of the Year exhibition in 2015. The Phoresy Pack exemplifies the intersection of traditional craftsmanship and cutting-edge design technology, pushing the boundaries of what a backpack can be while also fostering local craftsmanship and innovation.

Check out more [innovative designs and projects by Stepan Drunks](#).