Surface Tensions

Concept:

To create my conceputal model, I transformed my everyday branded style water bottle into a time based warning. The bottle becomes an hourglass whose sand is made of shrinking, self replicating mini bottles. A pastel, desirable object that is normally marketed as responsible merch is turned into a device that literally counts down while generating its own plastic afterlife. Even when framed as eco friendly, branded plastics persist, fragment, and multiply, mirroring how plastics become microplastics that we eventually ingest again. The idea also nods to a Futurama episode where Bender's copies keep duplicating at half scale until they become nano sized and take over. That joke becomes a metaphor for the endless afterlife of plastic.

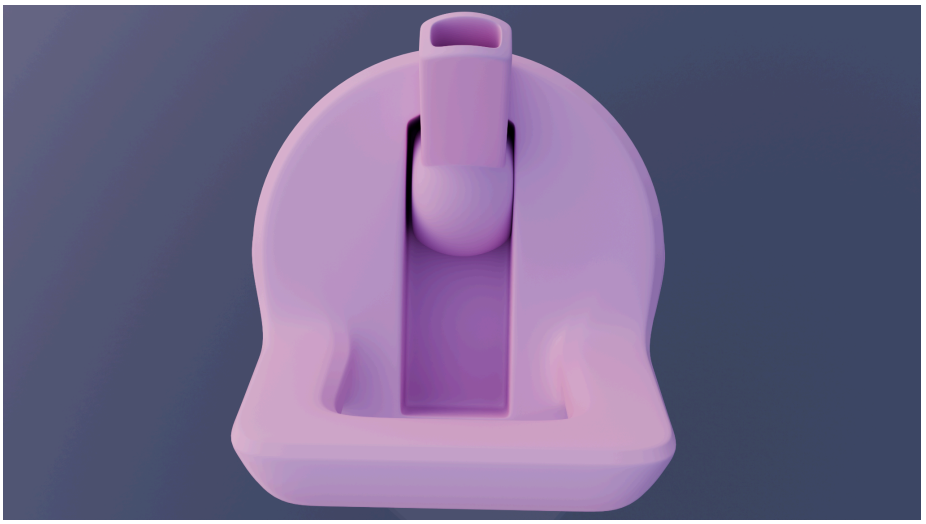
The project grew out of my original proposal: a sleek, material driven branded waterbottle bottle slowly overtaken by bark, moss, and sprouts, as if a forest were reclaiming the object. That version framed recycling as a poetic cycle in which what humans create, nature eventually takes back. While visually rich, it risked reading as brand friendly eco aesthetics, where the object still looks aspirational. Shifting to the bottle as hourglass let the critique operate more sharply and at a glance. Instead of nature erasing the object, the object erodes into its own branded residue. Recycling becomes fragmentation and multiplication rather than resolution.

Conceptually I explored two parallel metaphors. The first was multiplication, where the bottle reproduces into tinier versions of itself, echoing how "sustainable" product lines and brand variants can actually proliferate material volume. The second was erosion, where what is lost over time is not neutral sand but the product itself, breaking down into micro and nano scale fragments. The final model fuses these readings in a single image that ties consumer virtue and consumer volume together.

Key Checkpoints:

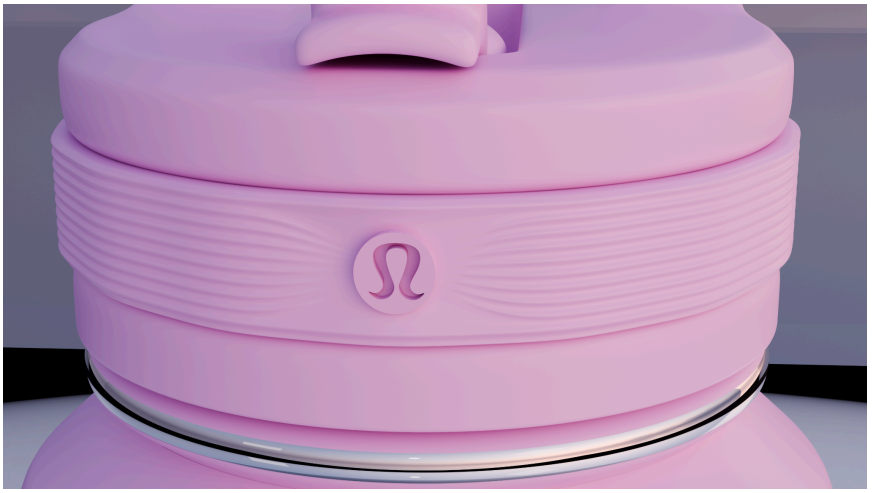
- **Modeled base bottle cylinder and lid, set proportions**

  I created the bottle and lid using the workflow from a tutorial, focusing on clean low poly topology, accurate proportions, and orthographic, numerically driven modeling.



- **Extracted and knifed the logo, tested SVG to beveled mark**

  Building on the tutorial's emphasis on keeping topology clean around feature areas, I carved a simple logo directly into the mesh using the knife tool to test how a shallow emboss behaves on a curved surface. Then I imported an SVG version of the logo, converted it to mesh, and added a small bevel, mirroring the way the tutorial uses bevels and support loops to control highlights. Comparing both approaches taught me how different workflows affect edge sharpness and how branding reads at product scale.

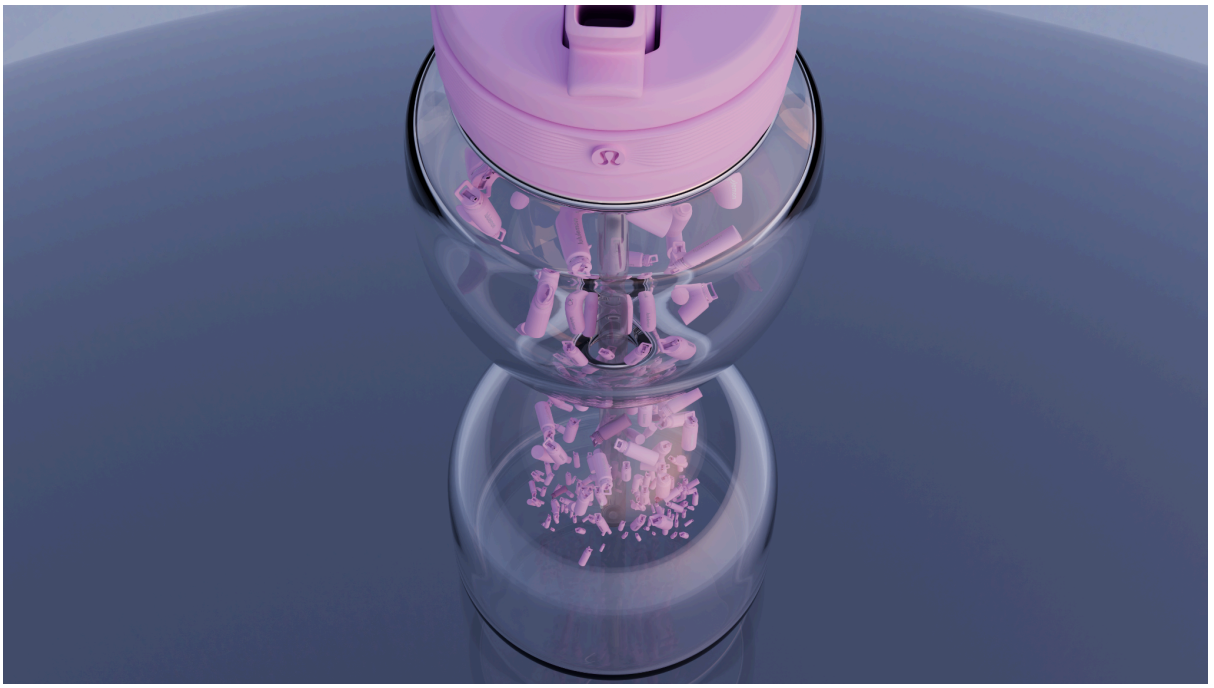


- **Remodeled to hourglass using loop cuts and proportional editing**

  Use loop cuts, edge sliding, and subdivision surface modifiers to reshape the bottle into an hourglass. I inserted additional loops and used proportional editing to pinch the midsection while preserving good edge flow.

- **Built a mini bottle and arranged instanced copies as sand after optimization passes**

  After modeling a simplified mini bottle using the same hard surface techniques as the main form, I duplicated it as instanced geometry to act as the "sand." The tutorial had already highlighted why avoiding n-gons and keeping topology efficient matters when subdividing, which became critical once I needed hundreds of copies. Early high poly tests caused crashes, so I aggressively reduced the mini bottle's geometry and relied on collection instances and random transforms to keep the scene lightweight but visually dense.

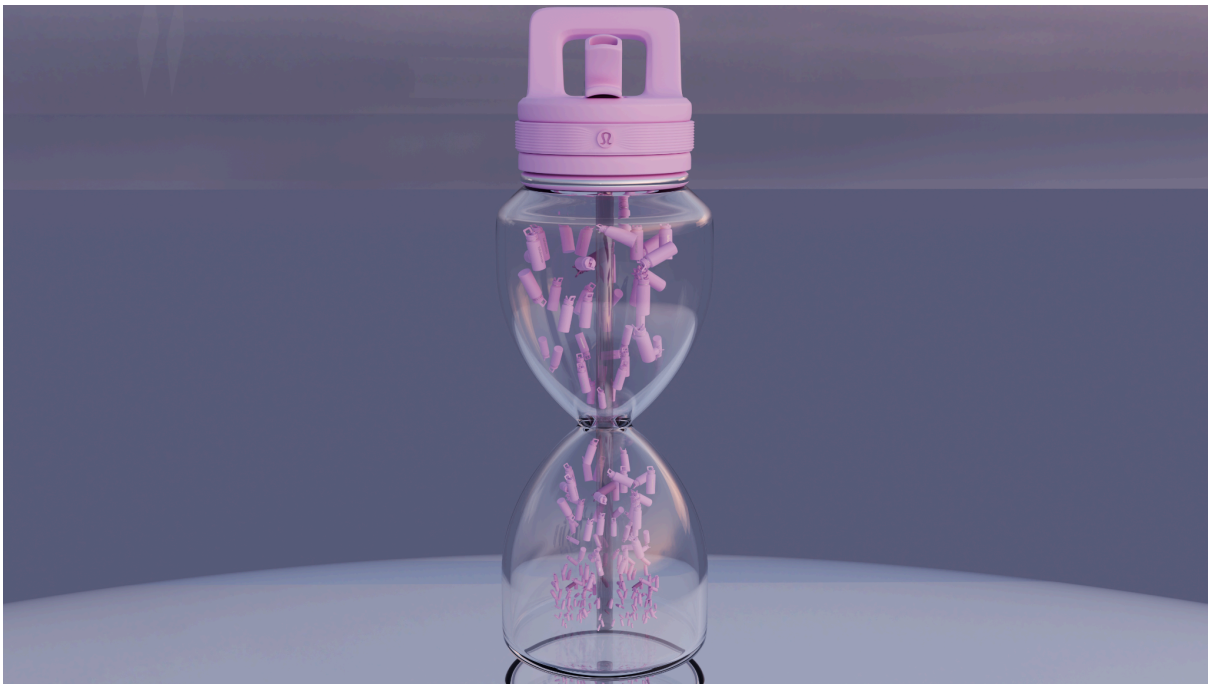


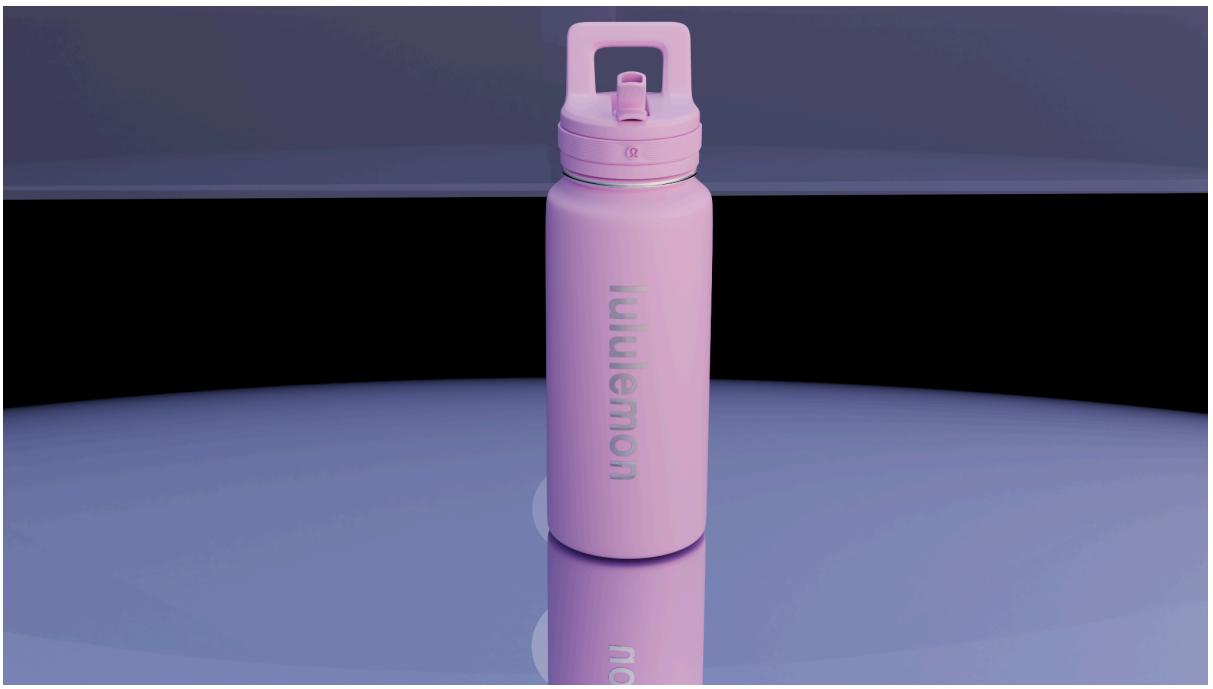
- **Tuned glass (IOR, roughness, thickness) in EEVEE and Cycles, resolved refraction artifacts**

  Extended the tutorial's basic transparent material setup into a more physical glass shader, dialing in index of refraction, roughness, and shell thickness and testing in both EEVEE and Cycles to correct refraction and intersection artifacts.

- **Rendered scene and close ups, minor compositor tweaks**

  Finally, I rendered hero and close up shots in Cycles, similar to how the tutorial demonstrates multiple viewpoints of the finished bottle.





Reflection:

This project strengthened my ability to connect form and concept while sharpening my hard-surface workflow. Using the sport bottle tutorial as a foundation, I reinforced clean topology habits, precise transforms, and a studio-style presentation that made the base model feel product-accurate.

From there, I extended those fundamentals into my own pipeline: better subdivision control around transitions (lid/handle), faster execution through shortcuts, and a more reliable glass workflow across EEVEE and Cycles through iterative testing of thickness, material values, and render settings until refraction read as believable.

The mini-bottles as “sand” revealed a clear production lesson: disciplined asset management matters. Instancing, lean geometry, and delaying heavy subdivision made the difference between instability and a workable scene.

Next time I’ll package what worked into a repeatable workflow (i.e., presets for render settings, glass and lighting) so I can spend less time troubleshooting and more time refining the concept and composition.

In the technical image, the bottle becomes its own countdown. What does it mean to “recycle” if the object only returns as smaller versions of itself? If eco-branded plastic persists and multiplies, what are we really buying into?

References

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Renders