MARCHING CUBES

Modular units derived from a historic graphics algorithm, developed for interactive performances and installations. Cold-rolled steel plate, fused-deposition polylactic acid, neodymium magnets.

Drawing inspiration from a computer algorithm of the same name, Marching Cubes leverages computational design and fabrication to make the virtual world material and tangible. In the 1980s, researchers devised an algorithm for generating computer graphics from medical scan data that featured an underlying language of faceted cubes. Marching Cubes translates this virtual procedure into interactive installations assembled from a modular set of over five thousand 3D printed components. By enacting the algorithm in the real world, this project generates dialogue about how information technologies create the building blocks of contemporary culture.

An algorithm is nothing more than a step-by-step procedure. Artists have a long-standing engagement with step-by-step procedures as generators of form: per Sol Lewitt, the “idea becomes a machine that makes the art.” In this case, the “machine” is an algorithm appropriated from one of the most transformative cultural forces in history: information technology. By inverting the typical application of this machine—from a procedure for converting form into computer-digestible units, to a procedure for converting computer-digestible units into form—Marching Cubes allows the user to, through tangible interaction, experience this fundamental algorithmic process.

Embodying the algorithm in a construction unit—a traditional vehicle for open-ended play and experimentation—places Marching Cubes at our fingertips, extracted from its usual background position within the inner workings of screen-based visualization technologies. Enabling the algorithm in this way requires physical movement on the part of the user, which, released from the error-correcting mechanisms present in a virtual instantiation, permits them to exploit the potential of “glitches” or other unintended consequences. Put another way: while assembly instructions are provided, they need not be followed.

Every Marching Cubes performance and installation is unique. A single, large-scale assembly can be created, or users can build, unbuild, and rebuild several smaller assemblies. The assemblies can be original designs or derived, using custom software, from 3D models or 3D scanned objects. Marching Cubes is participatory: new users can assist with an assembly, participate in various kinds of structured and unstructured play, or even follow instructions provided from a distance. Marching Cubes components are lightweight and efficiently packed and shipped in fitted boxes. All assemblies are documented using time-lapse image capture, adding to the growing library of Marching Cubes films.

The pages that follow document the expressive possibilities of Marching Cubes, as seen previously at venues around the world.

jessecolinjackson.com/portfolio/marching-cubes
Marching Cubes
Marching Cubes
Marching Cubes Assembly #18 (After Bunshaft)
Marching Cubes: Boris
Marching Cubes Assembly #28 (Gravity-Inflected Spherical Void)
Marching Cubes: Son of Boris
Marching Cubes: Daughter of Boris
Marching Cubes: 1987
Marching Cubes 1728