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3D Printing for Bricks

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3D PRINTING FOR BRICKS

THE NEED

- Fabrication System: Using 3D printing to fabricate bricks for architecture
- Material: Created a custom printing system for the 3D printer to print with ceramics.
- Design: New design possibilities for bricks –complexity and multiple functions can easily be incorporated.
- Design Process: Using parametric design software to develop each brick design. Both the overall form and the individual bricks were designed using parametric software (Grasshopper) that allows quick visualization of various design options, while also providing specific information about each brick such as the cost, printing time, and position within the full-scale assembly.

THE TECHNOLOGY

Building Bytes, by Brian Peters, is a project that uses desktop 3D printers to print bricks for architecture. Instead of using an expensive custom-made printer, it uses a normal standard 3D printer which is available for everyone and makes it more accessible and also easier for fabrication. One modification has to be made to the printer which is a “customized extrusion system (printing head)” for using liquids, such as concrete or ceramics (Building Bytes, 2014). This is beneficial since local and familiar material is used to produce bricks.

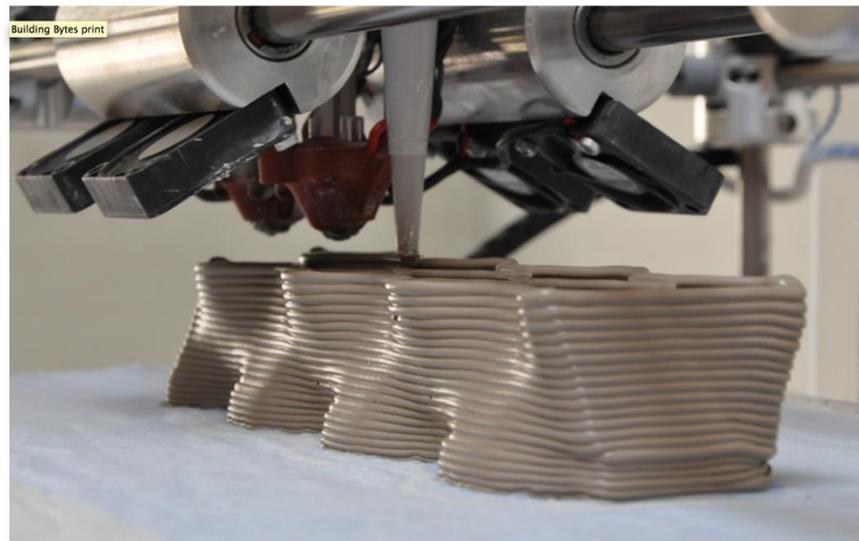


FIGURE 1 HONEY COMB BRICKS (RETRIEVED FROM BUILDINGBYTES HOMAPAGE)



Building Bytes also offers designers and architects an opportunity for new and inventive designs rather than just the standard extruded brick. These bricks can have complex exterior surfaces, as needed by the designer, and can also allow for interlocking shapes or curves along the exterior of the brick, while at the same time allowing for an interior that could be hollow to reduce the weight or increase their strength at certain points.

The bricks are made from a “liquid slip cast recipe of earthenware ceramics”, which is used for forming molds, while a 3D desktop printer is connected to an extrusion system consisting of plastic cartridges and air pressure (Building Bytes-About, 2014).



Figure 2 Type of bricks

[Video clip](#)

THE BENEFITS

Bricks are an ancient building component and their fabrication has seen several innovations throughout history. The fabrication, however, has consistently relied on molds or simple profiles, which were produced on brick extrusion machines. Building Bytes explores the new design and material possibilities offered by the use of 3D printers for the fabrication of bricks.

STATUS

Four brick types were developed to test and demonstrate the potential of this fabrication system and its full-scale applications in interior and exterior architecture. New forms and materials are currently being developed and tested.

BARRIERS

Unknown



POINT OF CONTACT

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REFERENCES

1. Building Bytes. (n.d.). Building Bytes. Retrieved August 21, 2015, from <http://buildingbytes.info/>

REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

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