1024-52-198 **Natasha Jonoska** (jonoska@math.usf.edu), Department of Mathematics, University of South Florida, 4202 E. Fowler Ave., PHY114, Tampa, FL , and **Gregory McColm*** (mccolm@cas.usf.edu), Department of Mathematics, University of South Florida, 4202 E. Fowler Ave., PHY114, Tampa, FL. *Algebraic Descriptions of Complex Geometric Shapes.*

We consider complex objects in some geometric space, composed of tile-like building blocks. We are given a few types of such blocks, each being a geometric solid that can join and adhere to other blocks via compatible faces. Geometric structures built of such blocks can be described by an algebraic system that includes formal devices assuring the rigidity of the structure and the non-intersection of its building blocks. We present such a system in which we start with a graphical description of our building blocks (and their possible articulations), from which we obtain a "walkspace" semigroup of placements of the building blocks in Euclidean space. We imagine this walkspace as a space of possible paths of a "turtle bug" that traverses the ultimate structure. The rigidity of the ultimate structure can be assured by fixing those paths that are to be cycles, while the non-intersection of blocks can be assured by forbidding certain paths in the walkspace. We outline some applications of this system and present some open problems arising from this nomenclature. (Received January 09, 2007)