

Talking About Math/Art: The Long Pause

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Abstract

Thoughts on discussing mathematical art, concerning the appreciative yet tongue-tied lay viewer.

Apologia

After much thought, I've decided not to add here to the literature on the production of geometrical art. The mathematical techniques I use are neither technically difficult nor conceptually deep, and anyone who is interested will find no obstacle to reverse engineering them should that be desired, or better, developing their own directions to a greater degree. Nor do I wish to repeat an introduction to the use of 3D printing technology, which is now widely known and well documented. What concerns me here is the central transaction of art: what happens when someone not the maker, be they naive or mathematically sophisticated, sees a sculpture. I can speak of this only from personal experience and opinion, so this paper – essay, rather – must stand unsupported by citation.

Enthusiasm, Interrupted

I'll guess that everyone who has made a piece of math/art has had the experience of showing it eagerly to a layperson and hearing the response "Neat!" followed by a long silence. This is characteristic: the work is well liked almost universally, and the market for it is strong, but viewers are at sea on how to discuss it. I wish to begin exploring what happens after the "Neat!". How can we get rid of the pause, and what is it hiding?

This is not entirely a matter of personal egotism, for it seems to me that a lack of clarity about how to discuss this art form is a real obstacle to its wider spread. As we – researchers, popularizers, artists, educators – create this field, we must also create a climate for discourse, in which the viewing public can build a language and context to discuss it. Although math/art is ancient, it has never been commonplace or mainstream, and certainly has not received the mass-pop currency which the new technologies are now enabling. Thus there is little historical precedent or culture in which to evaluate these works.

Artspeak

The literature of the history, appreciation, and criticism of art must, a fortiori, be applicable to math/art. We are accustomed to hearing nonmathematical sculpture evaluated in terms of expressiveness of line, composition of mass and void, balance and variety of viewpoints, choice of color and material, and so forth. It is vital to the development of this artistic movement that viewers have permission to discuss math/art in identical language. A blobby, insensitive or misbalanced sculpture has problems whether it is

a Muse or a minimal surface, and it is not crass or uninformed to say so, regardless of the delicacy or abstruseness of any mathematical concept involved. I submit that as creators and informed mediators, we must explicitly give permission for this type of comment.

In particular, it's necessary to resist any tendency to assert that conceptual or technical considerations may override those of good taste. To do so is analogous to stating that a work can be immunized against aesthetic criticism because it carries a moral or political message, and that dog won't hunt: viewers, and still less history, cannot be constrained to evaluate a work conditionally on terms set by its author or presenter. If we don't wish to remain marginal to the wider practice of art, we must accept its criteria fully, in addition to those peculiar to this form.

Cloak of Invulnerability

In math/art, the subject matter carries an intellectual authority that is widely perceived as impeccable, to the point of being overbearing. Mathematically naive viewers, even those knowledgeable about art, tend to feel disqualified from applying ordinary artistic criteria to the work, or indeed having any reaction but awe. They perceive the entire edifice of mathematics to inhere in each piece, and are cowed. It's an odd phenomenon as art goes – no one feels bashful opining about landscapes for lack of geological or botanical knowledge, and why should they? But I believe that this is the source of most of the pause, and that it must be specifically denatured before useful commentary can occur.

This is difficult. The temptation to the creator is powerful: the impervious aura I've described is about as unfair an advantage as a piece of art can have, and it is correspondingly difficult to resist leveraging it as a potent marketing tool. What is worse, the aura becomes viewer-driven. In my own presentation I take pains to distinguish works of my authorship from those that illustrate preexisting ideas, but I find that it's very difficult to make this message stick. Although my site says otherwise, many customers believe that I invented the gyroid, and that my own works illustrate deep, complex geometrical truths. (Neither is the case.) It's understandable that buyers and presenters should prefer that the work remain unassailable, but this confusion acts strongly to stifle even the limited level of comment that is normally made to an artist about their own work – I've led an astonishingly criticism-free artistic life – let alone thoughtful discourse. Before the pause can end, the aura must be exploded.

Approaching the Divine

Should math/art then be spoken of exactly as other art? Is it merely a style – a style so constraining that in many instances the usual decisional process of art-making is subsumed almost entirely into the requirements of the form? Haiku is a free format compared to what we do when trying to create a credible, informative physical representation of a polytope of dimension >3 , and also make it beautiful.

This art is not abstract in the sense of being idiolectic; obviously it refers to the shared language and experience of mathematics. Thus it is representational, an interpretive form, but one whose subjects are objects and experiences unfamiliar to most viewers. Perhaps one productive way to look at it is as a stop on the path toward mysticism, which translates ineffable experience. In speaking of mystical art, the crucial thing is that it cannot be evaluated in terms of that original experience, which is by definition inaccessible. In encouraging speech about math/art we need not go quite this far – there is some evidence that mathematicians exist – but it is necessary that we strongly resist conflation of the inspiring subject matter, which is as immune to criticism as rocks and trees, with the present object. An artwork is an evocative lump of material, a single data point in art history, and for the pause to end, we must give permission for ours to be approached on exactly those terms. And for this field to become a full part of art culture and history, the pause must end.