# On Mathematics in Art

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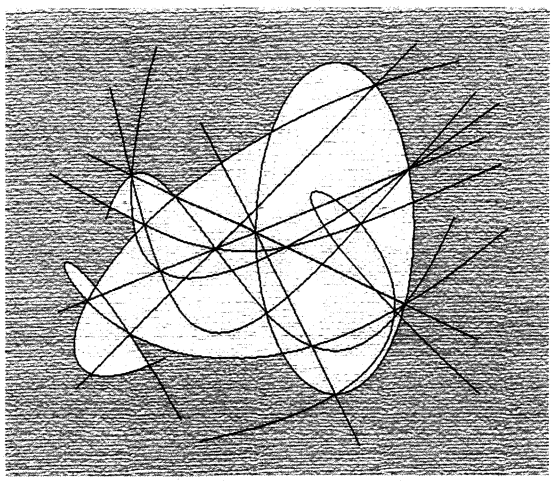
To say that mathematics is art is not to say that it is mere recreation. Art is not something, which exists to satisfy an aesthetic emotion necessarily. Art reveals to us some aspect of reality whether derivative or abstracted from geometric devices. This is possible because our knowledge and the external world are not two independent entities. Science has advanced enabling us to say that the external world is, at least very largely, our own creation; and we understand much of what we have created by understanding laws and rules, the laws of form and structure in accordance with which we must create. It seems that the mathematician, in creating art, is exhibiting that picture of our minds that has created the spatial material universe we know. Mathematics as much as concerns art, is one of the means by which we rise to a complete self-consciousness and pictorial vision. The significance of art and mathematics resides precisely in the fact that it is an art; by informing us of the nature of our own minds it informs us of much that depends on our understanding and precision. We are the enactors of laws of the universe; it is even possible that we can experience nothing but what we have created, and that the greatest of our mathematical creations is in the material world itself.

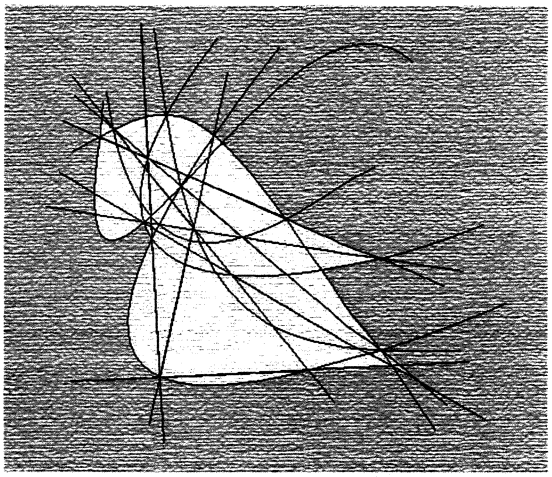
Mathematics is of profound significance in art, not only that it exhibits principles that we obey and respect, but because it exhibits principles that we impose. Mathematics in its own way, also performs this function, it is not only aesthetically beautiful but is also profoundly rational and meaningful. It is an art and a great art as it is employed in visual art. It suggests enormous latitude for references we employ and for our integration of geometrical space. I refer you to my Cut Space Series, etchings # 20, 32, 33, 37, 39, 40, © 2002-2003.

The further development of non-Euclidean geometry and its application to physical phenomena by Einstein has shown that Euclid's geometry is not only not a necessity of thought but is not the most convenient geometry to apply to existing spaces. The artist and mathematician are entirely free, within the limits of their imagination and understanding, to construct what pictorial worlds they please. What is to be imagined is a matter of artistic leap and imagination. If we can find, sets of entities that follow the same scheme as our mathematical entities, we have applied mathematics to an external creative enterprise in art; we have then created a branch of science in art.

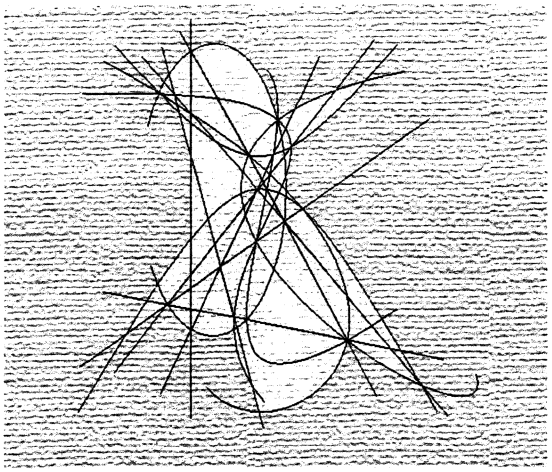
For my mathematical art, the fundamental concepts of limit, convergence, and continuity follow in the construct of the artwork. Thus, are rules I have derived from technical descriptive geometry that include such elements as the helical convolute, ellipse, hyperbola, parabola, and conic types with Pascal's line and Brianchon's point.



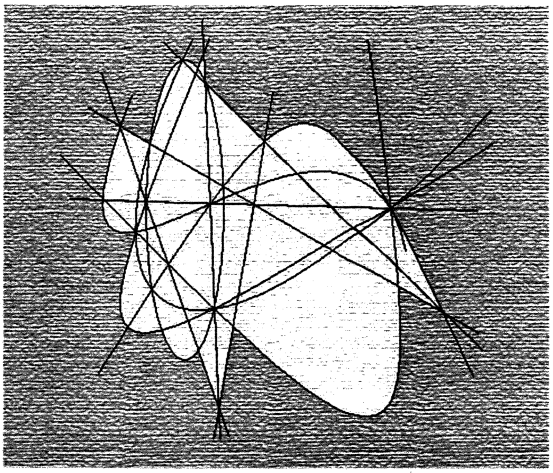
Clifford Singer, Cut Space Series # 32, 2002 ©, etching



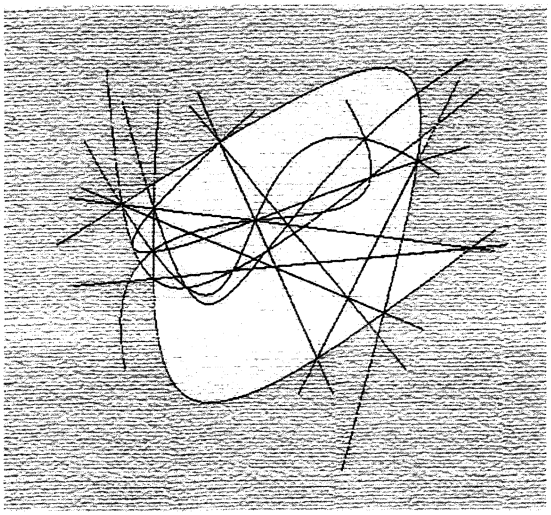
Clifford Singer, Cut Space Series # 37, 2002 ©, etching



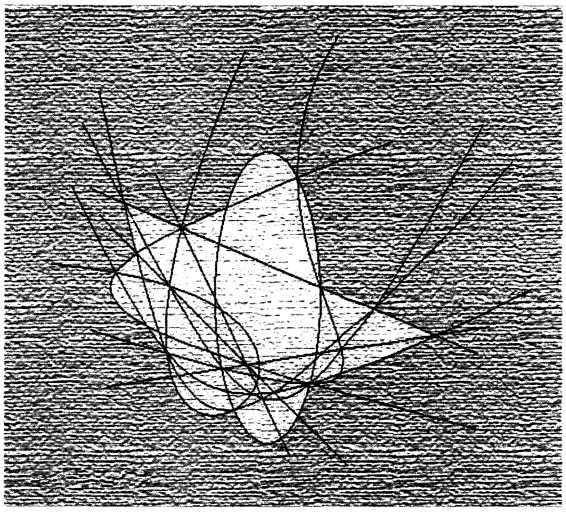
Clifford Singer, Cut Space Series # 20, 2003 ©, etching



Clifford Singer, Cut Space Series # 39, 2002 ©, etching



Clifford Singer, Cut Space Series # 33, 2002 ©, etching



Clifford Singer, Cut Space Series # 40, 2003 ©, etching