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November 2002

Reviews

'Elements of Grace' and 'Copernican Notes'

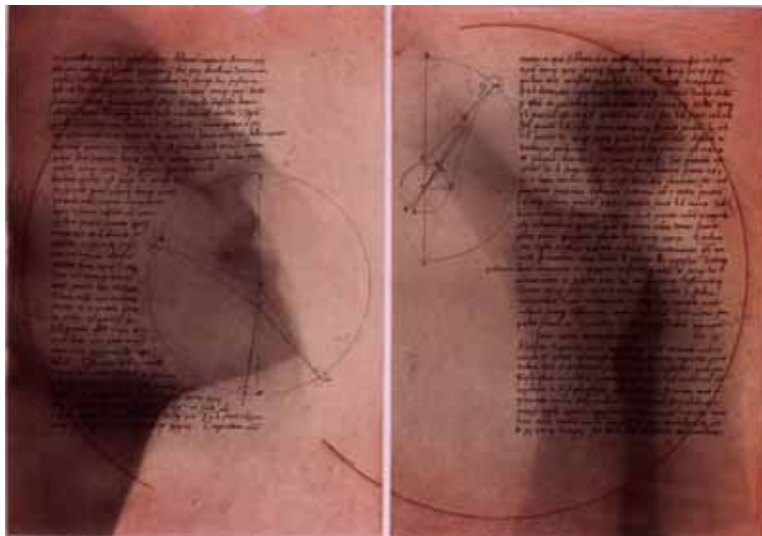
reviewed by Julia Hawkins



An exhibition of work by Canadian artist Catherine M. Stewart

5 September – 31 October 2002

During September and October, the [Isaac Newton Institute for Mathematical Sciences](#) showed a small exhibition of two suites of photo-etchings with mathematical components by the Canadian artist Catherine M Stewart, who studied both maths and physics in the course of her undergraduate degree at the University of Toronto. *Elements of Grace* is a collection of 12 photo-etchings which combine diagrams from Newton's *Principia Mathematica* (1729) with photodetails of the human body. *Copernican Notes* is a suite of multiple plate etchings in which text and diagrams from Copernicus' *On the Revolutions of Heavenly Spheres* (1543) are overlaid upon photographic images of moving figures.



'Elements of Grace' and 'Copernican Notes'

Deriving the motions of Saturn and Jupiter II.

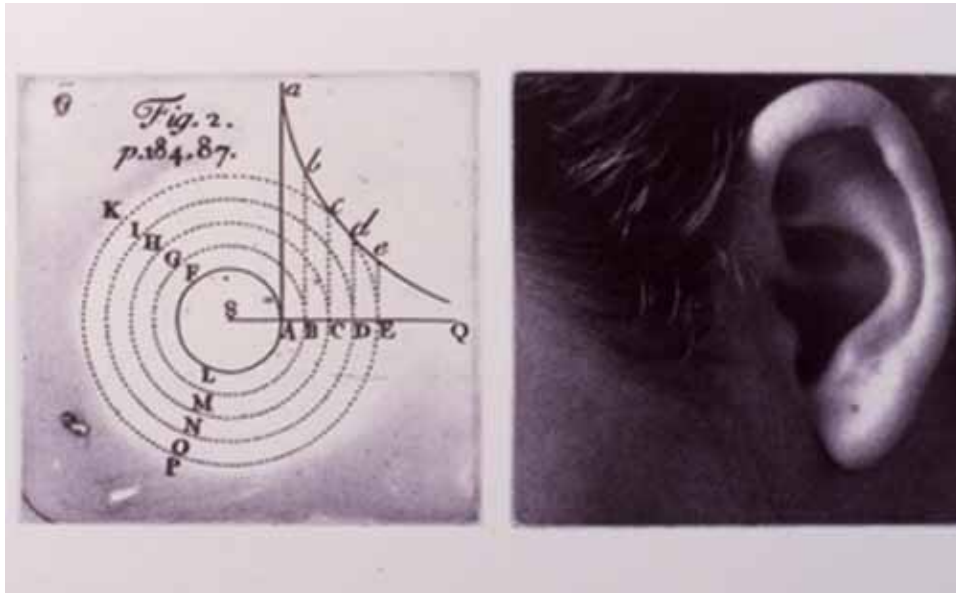
From Copernican notes. Copyright Catherine M. Stewart

Neither of these suites of works directly teaches us more about mathematics, nor do they try to do so – Stewart isn't attempting to do as Escher did and illustrate actual mathematical concepts – drawing a multi-dimensional world for example. Rather they follow the lead of many contemporary artists and writers in drawing parallels between mathematics or science and aspects of human experience, pointing out different ways of "reading" the mathematics involved, or loosely reinterpreting a mathematical idea as a cultural reference point. It's been a popular pursuit over the past decade or so – take Antony Gormley's *Quantum Cloud* sculpture on the banks of the Thames, made up of thousands of small shifting pieces of metal, grown outwards like fractals, which resolve, sometimes, to let you see a human figure within the mass; or Tom Stoppard's brilliant 1993 *Arcadia* (which does, in fact, explain quite a lot about mathematical concepts, and is one of the few plays in English to have a character stating Fermat's last theorem in full on stage). While Stewart may not be quite in Gormley's league in terms of either fame or the size of her works, this exhibition is both a fascinating and very visually appealing exploration of fragments of the dialogue between science and the arts.

The works within the *Elements of Grace* suite juxtapose black and white photographs of particular areas of the human body – an ear, a foot, an eye, hands – with etchings reproducing the engraved diagrams from the first English translation of Newton's *Principia Mathematica*, published in 1729. Catherine Stewart writes in her statement accompanying the exhibition that

I have always marvelled at the inherent beauty of mathematics... although the two types of images were so different in subject matter and graphic character, when brought together they seemed to relate to each other on another, more symbolic level. The eternal (Platonic) forms of the human body can be seen to be visually linked to the eternal forces of nature. A dialectic of sorts occurs with each combination.

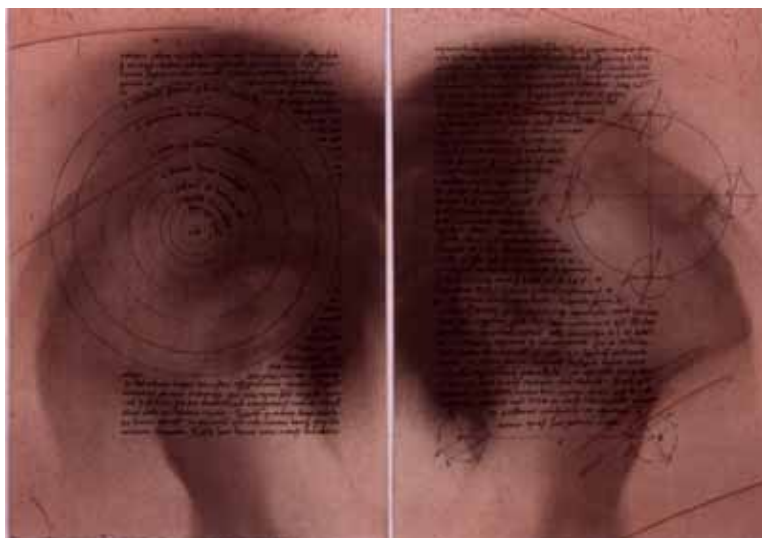
The spare, skeletal lines of the etched diagrams contrast with the shadowed flesh depicted in the photos, although the image as an entirety is bound together by the monochrome palette, and of course the physical juxtaposition. Some work better than others. "*Point of contact*" – the titles are all phrases drawn from the text in the *Principia* associated with each particular diagram – shows an eye: mathematical contact reinterpreted as human contact, eye contact, between the subject of the photo or even the picture itself and the viewer; an allusion also to the lines of focus that the human eye employs to allow us mechanically to see, with those diagrams of lines emanating from a side-on staring eye that we all drew laboriously, with the aid of rulers, in our school biology lessons.



Of the circular motion of fluids.

From Elements of Grace. Copyright Catherine M. Stewart

"Of the circular motion of fluids" shows a human ear, the curled whorls of the outer ear structure mirroring the curves within the diagram, and the mathematical concept illustrated reminding the viewer of the physical motion of the fluid within the inner ear, the organ of balance (like the balance between photo and diagram, the circular motion of references and cross-comparison between the two images, the circular relationship of mathematics and physical reality....). These etchings work particularly well in illustrating a real relationship between a mathematical abstraction and the workings of the human body, while others are less closely allusive, less layered – an apparently superficial similarity between a curve and a mouth, for example: the Platonic mathematical form echoed with human imperfection.



The order of the heavenly spheres.

From Copernican notes. Copyright Catherine M. Stewart

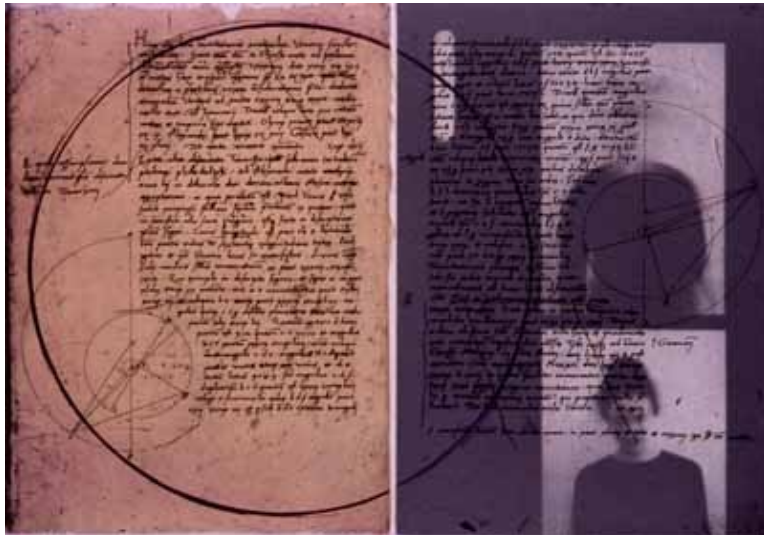
The plate etchings within *Copernican Notes* copy facsimile pages from the manuscript of *De Revolutionibus Caelestibus* (On the Revolutions of the Heavenly Spheres) by Nicolaus Copernicus, and superimpose them

'Elements of Grace' and 'Copernican Notes'

on blurred, shadowy photos of human bodies in motion, then in addition superimposing on both etched circles and orbits. These works are not only very appealing, with their palette of ochre, terracotta, sepia, cream, and the interweaving lines of manuscript and circles, but also immediately very conceptually successful, no doubt partly because humanity has always wilfully persisted in seeing close parallels between the movements of the planets and our own actions and impetus, from medieval astrology to the horoscope columns in today's tabloids.

Stewart herself refers not to this but to the History of Science mantra of the paradigm shift, writing in her notes on this suite of etchings that

The transition from childhood to adulthood can be likened to a Copernican paradigm shift. During this phase of intellectual development, a child's view of reality changes from one centred on self, family and immediate surroundings to one which encompasses much, much more. Furthermore, as an adolescent's view of the universe expands, an awareness of his or her place in it changes as well. This gradual change in perspective can be seen to parallel the shift in Western consciousness that occurred when Copernicus established that the sun, not the earth, was the centre of planetary motion.



Investigating the Motions of Venus.

From Copernican notes. Copyright Catherine M. Stewart

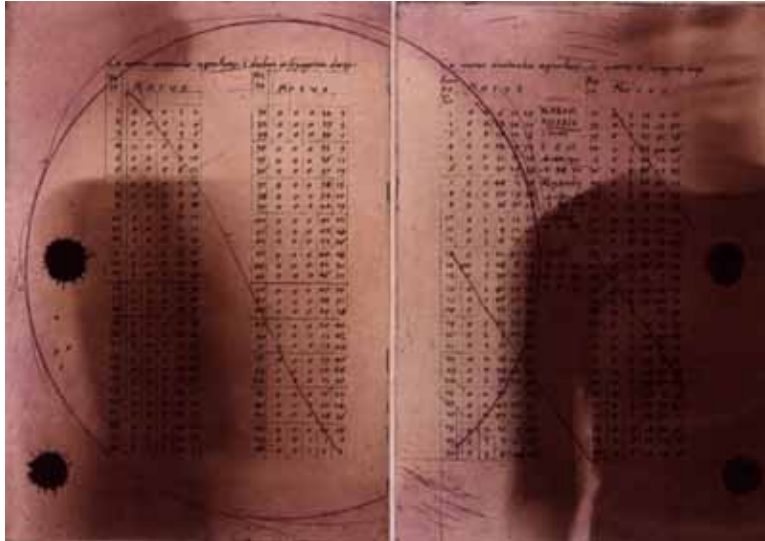
This reading of the images makes even more sense when one learns that the female figure in most of the etchings is Stewart's adolescent daughter. The images work well as illustrations of the tension between the egotistical and the universal, between our own small ideal microverses and the broader social and scientific contexts which we inhabit. My particular favourite is "*Investigating the Motions of Venus*", where the shadowy female figure beneath the etched orbit and Copernicus' text becomes a visual symbol of the confusions, repetitions and certainties of love as well as the cosmos, and where the title becomes an inextricably important part of the work as a whole, adding new possibilities of fresh and different readings to the viewer, appropriately enough since the etchings deliberately take the format of an open book.

It is, perhaps, the literary-ness of several of these images, the references to books and texts, that especially endears them to me; the exhibition notes themselves reveal the importance of the form of the book to the artist:

'Elements of Grace' and 'Copernican Notes'

When I opened a facsimile of the manuscript... I was immediately attracted to the penned Latin script, the hand drawn diagrams and the tables of celestial observations.... My urge was to bring these ancient and exquisitely detailed pages to life in a new and different context...

The dual format of these prints is that of an open book. To further this association, I used the technique of chine-collé whereby a second type of paper was introduced in the printing process. I selected a more delicate and warmly toned paper to replicate the texture and feel of the paper that might have been used on the original manuscript.



Anomalies of the motion of the equinoxes.

From Copernican notes. Copyright Catherine M. Stewart

"Reading" these works then throws up a palimpsest of memories of other texts, other books, discoursing on the interaction between the planets and man. For me, looking at *"Investigating the Motion of Venus"* prompts a ghostly echo of Chaucer's *Troilus* (appropriate again as Chaucer was a keen amateur scientist, writing a very readable *Treatise on the Astrolabe* for his ten year old son Lewis, who would I think in another age have been an avid reader of *NRICH* and *Plus* – "Lyte Lowys my sone", wrote Chaucer fondly, "I apercyve wel by certeyne evydences thyn abilitie to lerne sciences touching nombres and proporciouns..."), created only a century and a half before Copernicus wrote his manuscript, sitting disillusioned in heaven watching "the erratik sterres" and denouncing their control over human loves and lusts.

Interest in the prints has been expressed by other galleries in Edinburgh and Glasgow, and some of these works will be displayed next year in Germany, so with luck *Plus* readers will be able to see some of these works in other locations; Catherine Stewart is also planning a website. For anyone interested in the continual dialogue – frequently illuminating, sometimes a little confused on both sides, always fascinating – between science and the arts, these beautiful prints are well worth viewing, and add another small, clear voice to the cacophony.

About this review

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Julia Hawkins

The reviewer, Julia Hawkins, is Deputy Director of the MMP.

There will be another chance to see Catherine M. Stewart's work – several pieces from the *Copernican Notes* suite will be included in a group exhibition at the Ticket Gallery (on the same floor as the *Nicolai Concert Hall*) in Potsdam, Germany. The exhibition opens March 7, 2003 and will run for six weeks.

Catherine M. Stewart can be contacted on stewartcm@shaw.ca, or through her website at www.catherinestewart.net after Nov. 10, 2002.



Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.