The true language of love? It's math, says Berkeley professor

December 1 2010, By Carol Ness

All of the action in "Rites of Love and Math" centers on a mathematician and his lover, Mariko, whose name means "truth" in Japanese.

Beauty and truth aren't the first things that come to mind, for most people, when they think about math. Berkeley math professor Edward Frenkel is trying to change that.

He tells his classes in multivariable calculus that one of his goals is to unlock the subject's inherent beauty for them, the truth revealed by a mathematical formula.

And now, the culture itself is his audience. Frenkel has come out with a 26-minute feature film that aims to achieve that goal — but with drama, intrigue, love, sex and a tattoo.

Rites of Love and Math, which opened at the Max Linder theater in Paris in April, will have its North American premiere tomorrow night (Wednesday, Dec. 1) at the Shattuck Cinemas in Berkeley.

Even before the screening, it has touched a nerve on campus. The campus-based Mathematical Sciences Research Institute, one of two original co-sponsors of the screening, withdrew its support on Sunday in response to criticism from people who had seen the movie's trailer and found it "disturbing, offensive and/or insulting to women," according to a letter posted online by MSRI Director Robert Bryant. The screening will go ahead as planned.

The film is an homage to Yushio Mishima and follows closely the form and style of the only film directed by the Japanese writer, Yukoku, or The Rite of Love and Death. It is short, silent and acted on a set made to resemble a Noh theater stage. And, like Mishima's, it has only two characters, a man in the throes of an existential dilemma and the woman he loves.

Frenkel wrote, directed and produced the film, along with French filmmaker Reine Graves. He also stars in it — as a mathematician.

Mishima's plot revolved around a question of honor; his main character is an Army lieutenant torn between loyalty to his emperor or to friends staging a coup d'état. His answer is a ritual disemboweling in a suicide pact with his wife, joining their love forever in death. The 1966 movie was suppressed for almost 40 years after Mishima's suicide in 1970, but was brought out on DVD by the Criterion Collection in 2008.

In Frenkel's film, the mathematician faces a quandary familiar to theoretical scientists. He has found, at long last, the mathematical formula of love. But then he realizes that others could use his formula to cause harm — and that he must die to safeguard the world. He saves the formula by etching it into his lover's body.

It's an allegory, Frenkel says.

"Our film is about truth. The formula is representative of the truth about the world, which is what I think about mathematics," says Frenkel. The formula uses a particular language to communicate that truth to the world, he adds.

A professor at Berkeley since he was 28, Frenkel, now 42, is known for his work on symmetry and duality in math and quantum physics. He made the film in 2009 during a sabbatical in Paris as recipient of the first Chaire d'Excellence award from the Fondation Sciences Mathématiques de Paris.

Rites of Love and Math grew out of his conviction that math has become too divorced from the arts and humanities in modern culture. A film, he thought, could help reconnect the public with math's ideals.

Also, Frenkel says, "I think there's a stereotype in the culture. Films like A Beautiful Mind and Pi show mathematicians as social misfits, people on the fringe of mental illness or mentally ill. When I look around at my colleagues, I don't see that."

He set out to create a different image of a mathematician as someone who is fighting for ideas, who is in love.
Introduced to Graves, the two collaborated — and when they discovered the recently re-released Mishima film, they knew they'd found their inspiration.

"Mishima created the aesthetic language we needed," Frenkel says. "It was a moment of revelation."

In the film, an unusual method is used to hide and preserve the magical formula.

The film took 30 people to create, requiring the kind of teamwork foreign to a mathematician used to working alone or with one or two collaborators. It was shot in three days.

Frenkel, who had never acted or directed before, found himself learning on the job.

"It's not like mathematics where everything is planned. There are all kinds of surprises. You have to learn to embrace it," he says.

About 400 people — half of them mathematicians — showed up for the world premiere, which was sponsored by the Fondation Sciences Mathématiques de Paris, one of the film's funders.

Since then, it has played at festivals in Spain and Paris, and at several math and theoretical-physics centers, including the Institut Henri Poincaré in Paris, the Kavli Institute for Theoretical Physics at UC Santa Barbara and the Research Institute for Mathematical Sciences of Kyoto University in Kyoto, Japan.

The Berkeley showing is special, says Frenkel. "It's my town, it's where I have my friends, my students, my colleagues."

And as the home of the Free Speech Movement, he adds, "It's a place I feel comfortable showing the film. It's unconventional — and controversial even here."

The controversy bubbled up after the MSRI posted information about the screening and a link to the trailer on its website on Nov. 10. On Monday, the posting was replaced by a letter from Bryant explaining his withdrawal of the institute's support.

He had received emails from people who had watched the trailer and saw it as "depicting a male fantasy of sexual domination of women" and "sending a message the men do mathematics while women are reduced to passive sex objects," Bryant wrote.

The controversy, he added, revealed gender issues in mathematics "that are not being addressed."

Frenkel's response: "I regret their decision, which will be viewed by some as a form of prior censorship. I do, however, understand that MSRI has been subjected to great (if inadequately informed) pressures."

Since the film is only just becoming available in DVD, he concludes that the complaints come from people who have seen only the two-minute trailer. And in any case, he adds, the film is an allegory in which the female character represents the truth and mathematics, "to which we mathematicians (male and female) dedicate our professional lives."

The film was warmly received at all of its showings, he notes, and has been featured in scientific publications.

"At none of the showings in Europe and Asia and in none of the publications were there any suggestions that the film was in any way 'sexist' or offensive," Frenkel says.

He praises MSRI for supporting women and minorities in mathematics and says he considers their underrepresentation a serious issue.

But his film, he says, "should not be misread as germane to these issues. It is unfortunate that a work of art dedicated to the beauty of mathematics is being mistakenly placed in this context."

The screening of both short films is scheduled for 7 p.m. Dec. 1 at the Shattuck Cinemas in downtown Berkeley, with Berkeley Video and Film Festivals as its sponsor.

While Frenkel forges ahead with teaching and research on subjects like "nonperturbative effects and dualities in QFT and integrable systems," the experience of making Rites has left him eager to create another film. He and English professor Thomas Farber have written a screenplay, published as The Two-Body Problem, and are working on a theatrical adaptation, Frenkel says. Their goal is to make it a film.

For the first staged reading, on Nov. 21 in Evans Hall, Frenkel played a main role — a mathematician, of course.

More information: ritesofloveandmath.com/

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