Math & Gender, Gender & Math

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Does History Give a Clue?

What Does Google Say?

What Does ScienceDaily Say?

What Does Wolfram Alpha Say?

Math Itself Provides the Real Insight
  - Topology
  - Knot Theory
  - Graph Theory

Conclusion
Does History Give a Clue?

to adhere to scientific standards let’s start at the beginning

- all we know is Eve used an Apple
- whereas Kain used brute force

the common setting must have looked like this

comp.jpg
Pythagoras founded Pythagoreanism (wikipedia) Women were given equal opportunity to study as Pythagoreans, and learned practical domestic skills in addition to philosophy. Women were held to be different from men, but sometimes in good ways. The priestess, philosopher and mathematician Themistoclea is regarded as Pythagoras’ teacher; Theano, Damo and Melissa as female disciples. Pythagoras is also said to have preached that men and women ought not to have sex during the summer, holding that winter was the appropriate time.
more history

The Monad was a symbol referred by the Pythagoreans as "The First," "The Seed," "The Essence," "The Builder," and "The Foundation".

https://upload.wikimedia.org/wikipedia/commons/thumb/e/e3/Monad.svg/1024px-Monad.svg.png

Martha Schad: Die berühmtesten Frauen der Weltgeschichte believe me, it does not give a clue!
What Does Google Say?

Today in scientific research it seems to be good practice to do field studies by first asking Google. Google answers

- Research indicates the Gender Gap in Math is narrowing (ca 64.000 hits in 0.25 secs)
- Research indicates the Gender Gap in Math is widening (ca 79.900 hits in 0.26 secs)
- Buy Math (ca 76.800.000 hits in 0.25 secs)
- Buy Gender (ca 87.000.000 hits in 0.16 secs)
- Buy Sex (ca 488.000.000 hits in 0.28 secs)

The result is obvious!

It’s time to turn to something more serious!
What Does ScienceDaily Say?

- Gender Gap in Spatial Ability Can Be Reduced Through Training
  September 16, 2010 A new study describes an intervention that is effective in eliminating the gender gap in spatial abilities. While the research doesn’t yet show that the intervention leads to better achievement in
- Gender Stereotypes About Math Develop as Early as Second Grade
  March 14, 2011 Researchers report that children express the stereotype that mathematics is for boys, not for girls, as early as second grade, before gender differences in math achievement
- Teachers Unaware of Growing Gender Gaps in Classrooms, US Study Finds
  March 24, 2011 A gap in reading and math scores still exists in lower grades, with boys continuing to outpace girls in math, and girls ahead of boys in reading
What Does ScienceDaily Say?

- **Females Are Equal to Males in Math Skills, Large Study Shows**  
  Oct. 13, 2010 The mathematical skills of boys and girls, as well as men and women, are substantially equal, according to a new examination of existing studies.

- **Twin Study Helps Scientists Link Relationship Among ADHD, Reading, Math**  
  Dec. 10, 2010 Children with ADHD can sometimes have more difficulties on math and reading tests compared to their peers. A new study used identical and fraternal twins to look at the genetic and environmental influences underlying ADHD behaviors, reading, and math skills.

- **Not Actually Bad at Math or Auto Repair? Women Fear Being Stereotyped by Male Service Providers**  
  March 12, 2011 Women prefer female service providers in situations where they might fall prey to stereotypes about their math and science abilities.
What Does ScienceDaily Say?

- **Gender Gap Persists at Highest Levels of Math and Science Testing, 30-Year Study Finds**
  July 7, 2010 A study that examined 30 years of standardized test data from the very highest-scoring seventh graders has found that performance differences between boys and girls have narrowed considerably, but boys still outnumber girls by more than about 3-to-1 at extremely high levels of math ability and scientific reasoning.

- **Women Subject to Objectifying Gazes Show Decreased Math Ability**
  February 4, 2011 Women who are looked at as sexual objects not only react as sexual objects, they also exhibit less proficiency with math, according to a new ... > full story
What Does Wolfram Alpha Say?

- If asked for *mathematics* AND gender, it allegedly is using the closest Wolfram|Alpha interpretation: *mathematics* and holds forth about math page for page starting with basics like 125+375.

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- If asked for *gender* it gives two Definitions:
  1. noun | a grammatical category in inflected languages governing the agreement between nouns and pronouns and adjectives; in some languages it is quite arbitrary but in Indo-European languages it is usually based on sex or animateness
  2. noun | the properties that distinguish organisms on the basis of their reproductive roles

Result: *math and gender* leads to sex.
Math itself provides the real insight

it’s not gender but genus (as in genius)
in topology there are beautiful bodies with varying genus/genera

https://upload.wikimedia.org/wikipedia/commons/9/9f/Torus_illustration.png
https://upload.wikimedia.org/wikipedia/commons/b/bc/Double_torus_illustration.png
https://upload.wikimedia.org/wikipedia/commons/f/f0/Triple_torus_illustration.png
Math itself provides the real insight

In knot theory there are beautiful knots with varying genus/genera

http://math201s09.wikidot.com/local--files/knotpages/Knotts.jpg
http://math201s09.wikidot.com/local--files/knotpages/olivia
Math itself provides the real insight

In knot theory there are beautiful knots with varying genus/genera

http://math201s09.wikidot.com/
local--files/knotpages/7PlaguesKnot.png
http://math201s09.wikidot.com/
local--files/knotpages/Picture6.png
Math itself provides the real insight

In knot theory there are beautiful knots with varying genus/genera

http://math201s09.wikidot.com/local--files/knotpages/Love-Knot.png
http://math201s09.wikidot.com/local--files/knotpages/tan.png
Math itself provides the real insight

In graph theory there are beautiful graphs with varying genus/genera

- the complete graph $K_n$ has genus 
  \[ \gamma(K_n) = \lceil (n - 3)(n - 4)/12 \rceil. \]
- the complete bipartite graph $K_{m,n}$ has genus 
  \[ \gamma(K_{m,n}) = \lceil (m - 2)(n - 2)/4 \rceil. \]
- the hypercube $Q_n$ has genus 
  \[ \gamma(Q_n) = 1 + (n - 4)2^{n-3}. \]

http://www.benpadiah.com/basic_intro/hypercube.jpg
Math itself provides the real insight

Bipartite graphs represent a model of the relations between males and females.

$K_{3,3}$ can only be embedded in a surface of genus at least one.

Result: theory gets nasty in reality!
Math itself provides the real insight

Let’s do some deeper inspection of the bipartite graph $K_{3,3}$. 
Math itself provides the real insight

and see what’s happening if $K_{3,3}$ is mirrored (Risse-paradox [6])
it may be just cs not math, stupid

if still there isn’t a clue, try this one

You do not have an email address, Mrs Kroger; so I though I’d just come along in person to see You; my name is Spam. Do You need a penis extension?

https://senfundkren.files.wordpress.com/2008/02/spam.jpg
Conclusio: Further Research is Needed!

summing up we see: history does not give a clue

- Adam goofed up because it’s only Chuck Norris who can divide by zero and has counted up to infinity twice
- Eve goofed up because obviously she did not convince Adam to use an Apple
- all the rest of us goofed up, e.g. all us teachers

There are three guys in a room; if five leave then two have to come in such that the room is empty again. OK you dimwits?

http://file1.npage.de/002292/77/bilder/mengenlehre.jpg
Conclusio: Further Research is Needed!

*Google, ScienceDaily, Wolfram Alpha:* Everything leads to Sex!

but Loriot [3]: men and women do not go too well together . . .

http://i114.photobucket.com/albums/n248/elitehunters/manwoman.jpg
References & recommendations for Your own further research

http://idkf.bogor.net/buku.elektronik/MathematicsandSex/mathematicsand_805951.pdf


[3] Loriot: Männer und Frauen passen einfach nicht zusammen; Diogenes

[4] Mgccl: Math is like sex, but more so;
http://mgccl.com/2008/07/12/math-is-like-sex-but-more-so

[5] Pythagoras of Samos (* ca 569 BC in Samos, Ionia, † ca 475 BC)
http://www-history.mcs.st-andrews.ac.uk/Biographies/Pythagoras.html

[6] Thomas Risse: A Surprising Conjecture on $K_{3,3}$; to be published

http://www.marixverlag.de/eshop/Leseproben/00930.pdf