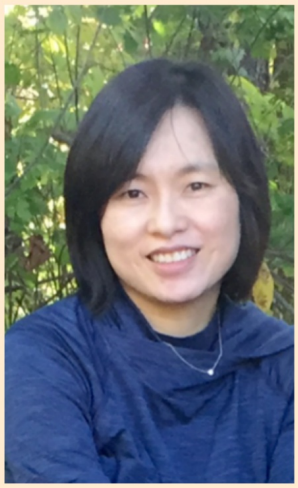
# Mathematician Monday:

# Hee Oh

**Hee Oh** (오희, born 1969) is a South Korean mathematician who works in dynamical systems. She has made contributions to dynamics and its connections to number theory. She is a student of homogeneous dynamics and has worked extensively on counting and equidistribution for Apollonian circle packings, Sierpinski carpets and Schottky dances.[1] She is currently the Abraham Robinson Professor of Mathematics at Yale University.[2]

## Mathematician Monday:

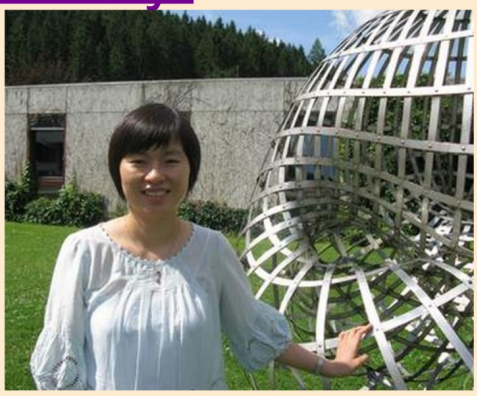
Hee Oh



She graduated from Seoul National University in 1992, and obtained her Ph.D from Yale University in 1997.

# Mathematician Monday:

## Hee Oh



She held faculty positions at the Princeton University, the California Institute of Technology and Brown University, amongst others, before joining the Departments of Mathematics at Yale University as the first female tenured professor in Mathematics there.

# Mathematician Monday:

## Hee Oh
## In her own words:

**When did you realize that you wanted to be a professional mathematician, and what aspect of mathematical thinking appeals to you most?**

It happened during my junior year of college in Korea. By that time I had completely stopped doing mathematics because I was drawn to social science and activism. I thought helping the weak and underprivileged in society was a better use of my finite life in this world.

After a while of being an "activist," however, I came to realize how much I loved thinking about math problems and how badly I missed it. So I came back to math in earnest and decided to become a mathematician.

I like that a mathematical problem has always an answer. We strive either to prove or disprove, but we know that only one of the possibilities is true. To me, this clarity is a huge attraction, which is only possible because we are dealing with the absolutely abstract world, unlike, for example, in social sciences where the complexity of reality is such that there never seem to exist one clear answer but many different and incomplete answers.

# Mathematician Monday:

# Hee Oh
# In her own words:

**In your experience, is there a general habit of mind that all great mathematicians seem to share?**

Well, many that I know love art, music and hiking, but that's pretty much it as far as I can observe. In fact, mathematicians seem to be very different from each other in their modes of thinking.

**How do you think through mathematical problems?**

In the early stage of solving a mathematics problem I usually have very little understanding of what is going on or how the problem will be solved eventually. However, after making many little steps toward the solution, and after being stuck for a while not being able to move forward, there is this dramatic moment when I hit the key insight that opens the last door to the solution.

It is as though I feel my way through the darkness, find a switch to light up the room, and come to appreciate how perfectly organized and beautiful that room really is. I look around and understand the role of each piece of the problem I stumbled over in my wanderings searching for that switch.

Although in the beginning it looks like there is no structure, each mathematical problem has indeed a beautiful structure, not unlike what we appreciate in a great art work.

# Mathematician Monday:

## Sierpinski Carpets

The construction of the Sierpinski carpet begins with a square. The square is cut into 9 congruent subsquares in a 3-by-3 grid, and the central subsquare is removed. The same procedure is then applied recursively to the remaining 8 subsquares, ad infinitum.