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September 1999

Features



A postcard from Italy



Eugen Jost is a Swiss artist, born in Zürich, whose work is strongly influenced by mathematics.

His early career was a technical one: after taking an apprenticeship with Siemens–Albis Telecommunications and working as a technical designer at Bobst et fils in Lausanne, he went on to Teacher Training College in Bern, later becoming a teacher and an instructor in Matten/Interlaken and Spiez.

For the past fifteen years, he has studied and worked in the field of art, particularly pottery, sculpture, and painting. He likes to experiment with signs and numbers, letters and characters, and his preferred techniques and materials are currently silkscreen and acrylic colours.

He has had a number of exhibitions in recent years, and has an exhibition in the Berner Schulwarte in Bern from August 19th until October 1st, 1999.

While holidaying in Italy, he sent us this extended postcard, exploring what it is about mathematics that fascinates him, and giving us some examples of his work.

Nature and Numbers, Signs and Symbols

Just now I'm spending my holiday somewhere in Italy. Sitting in an armchair under an umbrella on an Adriatic beach, I'm trying to find out how I can use this very umbrella as a sundial, using not more than a little bit of trigonometry...

For me, mathematics has a lot to do with creativity, with finding out, with puzzles, with curious numbers and number sequences, and much less with exact proofs:

- Try finding the square root of **12345678987654321**.

A postcard from Italy

Isn't the beauty of this square and its root striking?

- **10213223 1031223314**

What do these two numbers have in common?

- **1 11 21 1211 111221 312211**

Is this maths? Is this "language"?

- **1 1 2 3 5 8 13 21 34 55...**

Trivial at first sight, but...

- **Was it a cat I saw?**

The world of palindromes and symmetry, mathematical or otherwise, is the world I like to play in.

$13 + 31 = 44$, which is a palindrome.

$38 + 83 = 121$, a palindrome too;

$69 + 96 = 165$; $165 + 561 = 726$; $726 + 627 = 1353$; $1353 + 3531 = 4884$, another palindrome.

- Paradoxes are fascinating.

In this sentence there are eight words.

In this sentence there are not eight words.

The books of Martin Gardner and other authors with a similar attitude towards mathematics have very much inspired me, and have indirectly influenced my work as an artist.

The realm of numbers is one region I deal with in my pictures; the other is language. The longer I work in those two fields – numbers and language – the less I see clear border lines between them. With both I can describe reality, with both I can play.

In the following poem I try to express this thought:

Zahlen und Zeichen	Numbers and Names
Wörter und Worte	Wording and Words
Mit zwei Dutzend Lauten	With two dozen sounds we name the world loud and soft clear or ambivalent we create new worlds and universes
bilden wir die Welt ab	
laut und leise	With numbers and names we measure heaven and earth black on white we create new worlds and universes
ein- oder	
mehrdeutig	
schaffen wir neue Welten	With planes and lines we depict human, stone and animal polychrome or grey we create new worlds and universes
oder gar Universen	
Mit Zeichen und Zahlen	

A postcard from Italy

vermessen wir Himmel und Erde

schwarz

auf weiss

schaffen wir neue Welten

oder gar Universen

Mit Fläche und Linie

stellen wir dar Mensch, Stein und Tier

polychrom

oder

grau

schaffen wir neue Welten

oder gar Universen

English translation by Catherine Schelbert

e-mail: schelbert@spiderweb.ch

A postcard from Italy

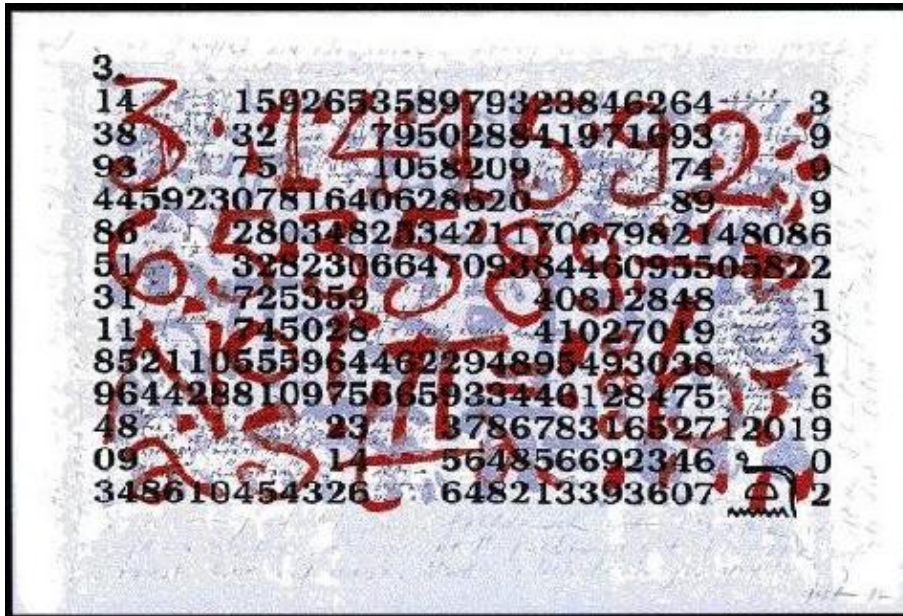


The picture above is a silkscreen, 57 x 76 cm. It shows the Niesen, a mountain near the lake of Thun in the Bernese Oberland.

Every day I see this mountain. With a few words, numbers and symbols written under the picture of the Niesen I try to relate sketch, numbers and language: montagne (mountain); sehen (to see, to look at, to perceive); reduzieren (to reduce); zählen (to count, to measure); abbilden (to represent). The numbers indicate position and time; about the symbols and the code I do not say anything here.

Pi in the Sky

A postcard from Italy



Pi in the Sky.

Let me call the picture above *Pi in the Sky* (referring to the wonderful book of the same title by John D. Barrow). It is a silk screen combined with other techniques.

Thinking of pi, I first of all think of the history of mathematics. Almost always, when I have to calculate the circumference of a circle I use the approximation $\pi=3$, and I feel a connection with a Hebrew living some 3000 years ago: when King Solomon ordered a great basin for sacred purposes, its diameter was described as 10 units and its circumference was described as 30 units.

He [Hiram of Tyre] also made a big bronze basin called "The Sea". It measured 10 cubits from rim to rim, was circular in shape, and stood 5 cubits high. Its circumference was 30 cubits.

[1 Kings 7:23]

The human endeavour to calculate more and more digits of pi is most fascinating. The sequence of pi's digits has opened a wide field for speculation. Is pi truly random? If yes, then I'll find every possible sequence of numbers in it. I'll find the time and date of my birth, I'll find my telephone number, I'll find my address and all my personal dates (if I code the alphabet in an adequate way). I'll even find all Shakespearian texts, coded, in pi. Is this really true? Can I, for example, find a billion decimals of pi "in pi", somewhere in the infinite row of its decimals? Can I find the "whole pi" "in pi"? Paradoxes which come out when dealing with infinity I find most amusing...

The Fibonacci sequence

A postcard from Italy



You know my name (look up the number).
Acrylic colours on paper, 63 x 90 cm.

All readers of PASS Maths know, of course, the following integer sequence:

1 1 2 3 5 8 13 21 34 55

It is the Fibonacci sequence, previously discussed in [The life and numbers of Fibonacci](#) in [Issue 3](#).

Here in Italy you come across this number sequence everywhere. You see the Fibonacci numbers in the spirals of the stems of palm trees, in the spirals of the pine-cones, in the spirals of the artichokes, and – above all – in the spirals of the sunflowers ("girasole" in Italian).

Why is nature mathematically describable? The world of numbers has innumerable parallels to the world of nature. A lot of interesting books on this subject have been published in the last few years: Paul Davies' *The Mind of God*, John D. Barrow's *Pi in the Sky*; Ian Stewart's *Nature's Numbers*.

For me the sunflower and the Fibonacci sequence stand for all miraculous connections between nature and numbers. I adore nature, I adore numbers, and therefore I try to combine those two fields in my pictures.

A postcard from Italy

Here a little poem, combining symmetry with paradox:

How I like the perfect symmetry of your face!

Specially your left ear

is shaped in an unique beautiful way.



rot-gr $\frac{1}{4}$ n.
Serigraphie, 64 x 64 cm.

A postcard from Italy



reft and light.

Acrylic on paper, 60 x 80 cm.

The most famous German writer was Johann Wolfgang Goethe. His *Hexeneinmaleins* deals with the numbers 1, 2, ..., 10. Scores of mathematicians and philosophers have tried to decipher this poem and to find out its hidden meaning (if it exists at all...).



A postcard from Italy

Hexeneinmaleins.
63 x 90 cm.



Gnudung.
Acrylic on paper, 57 x 76 cm.

Numbers have an etymological meaning (which is partly the same in English and in German, both being Indo-European languages). One, two, three. Three, as an example, has a connexion to the words trans (trans being greater than the numbers one, two); trivial; très (French: a lot; more than two...); trio; ...

I like putting number-words in my pictures:



Picture Rainfall, Spring 1999.
60 x 83 cm.

Never has it rained so much in Switzerland in recent decades as it did this spring. Spring/Fall: A symmetric pair of words. In the picture above there are a lot of curious and interesting numbers.

The topic of language and numbers has kept me busy for the last ten years. I intend to go on working on that subject. I would like to extend the connection between numbers and language (in German) to other languages.

From the 19th of August up to the 1st of October I'm having an exhibition in Bern. If you are interested in details, or if you have questions about the hidden meanings of some numbers in my pictures, or would like to organise a showing in your country, or perhaps if you have a great white wall at your university, school, or home that you would like to be painted with words and numbers, please send me an e-mail:

jostechk@datacomm.ch

Let me finish this article with a short puzzle: What is special about the number FORTY?

With best regards,

Eugen Jost

Further Reading

- *Mathematical Circus* by Martin Gardner, Penguin Books, 1990.
 - *Mathematical Puzzles and Diversions* by Martin Gardner, Penguin Books, 1986.
 - *Aha! Gotcha: Paradoxes to Puzzle and Delight* by Martin Gardner, Penguin Books, 1982.
 - *PI In The Sky* by John D. Barrow, Penguin Books, 1993.
 - *The Mind of God* by Paul C.W. Davies, Penguin Books, 1993.
 - *Nature's Numbers: Discovering Order and Pattern in the Universe* by Ian Stewart, Phoenix Paperbacks, 1998.
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Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.