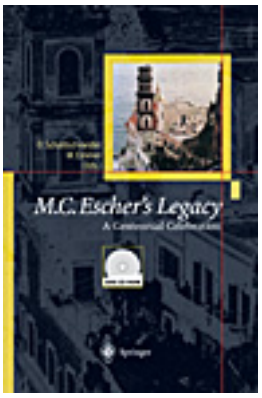
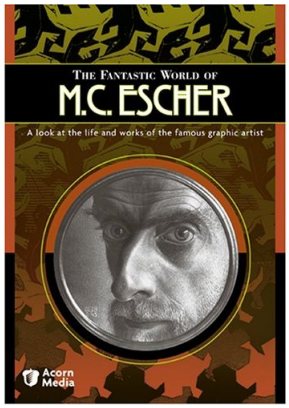
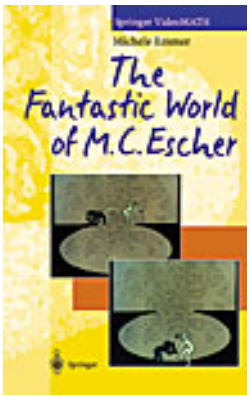
M.C. Escher's legacy, a centennial celebration *D. Schattschneider, M. Emmer (eds)*, Springer Verlag, Berlin, 2003 (458 p.), Hard cover, including CD-ROM, ISBN 3-540-42458-X.

M. Emmer *The Fantastic World of M.C. Escher*, Video tape, (approx 50 min.), 2001, Springer Verlag, Berlin, ISBN 3-540-92646-1. Now also available as a DVD by Acron Media, 2006.



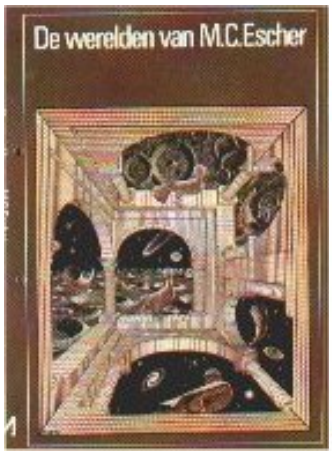


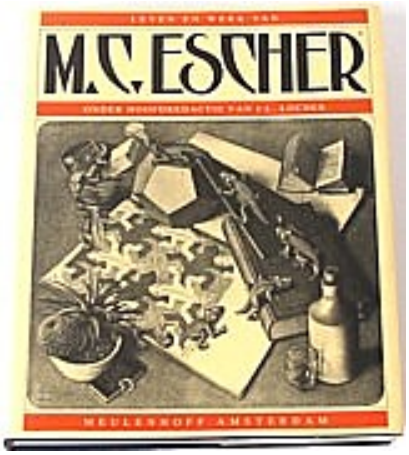


Maurits Cornelis Escher (1898-1972), or Mauk as he was called by his family, is probably the most popular graphical artist known all over the world. He spent most of his youth in Arnhem. At the age of 20 he started courses for architect in Haarlem, but, not being brilliant in mathematics, he gave up soon to start graphical arts.

His early work includes landscapes and insects. Many of them were made on his trip to Italy, and later Spain where he was fascinated by the decorative tilings in the Alhambra palace of Grenade.

Later he returned to Italy where he met his future wife. They lived for a while in Switzerland, but returned to Italy again.





His first contact with mathematics was through his brother, a geology professor in Leiden, who recognized the symmetry groups from crystallography in his brothers woodcuts. The 17 plane symmetry groups he found in Polya's work were the inspiration for his work on tiling the plane while they were living in Belgium (1937-1941). They fled to Baarn in Holland when the Germans invaded Belgium.

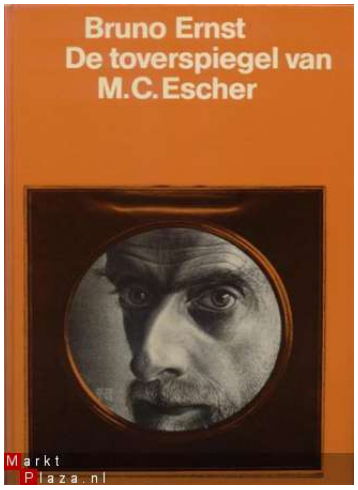
Later, in 1958, he learned about hyperbolic geometry from a paper by Coxeter, who became a close friend. This type of geometry is used in several of his prints subdividing the circle. His fascination for the tessellation of the plane led him to his write book *Division of the Plane* [1].

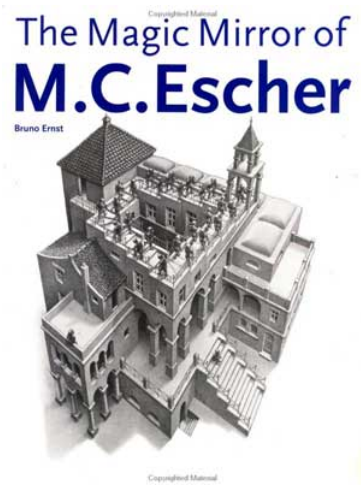
He was also fascinated by topology which he learned from Roger Renrose, and this gave rise to his experiments with several "impossible figures".

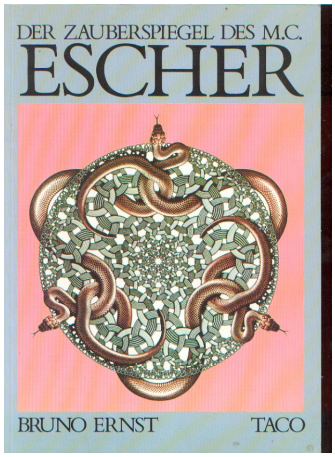
He became rather famous by the end of the 1950's. This is because there was an exposition in 1954 on the occasion of an international mathematical congress in Amsterdam. For some reason (probably the dream-like magic world the he evocated) his work became popular among the hippy community who reprinted his work illegally in flashy colours much to the disliking of the artist.

Even Mick Jagger wrote a letter to Escher asking him to design a picture for the next album of the Rolling Stones in 1969. Maurits declined, and since Mick Jagger had started his letter with "Dear

Maurits", Escher closes his formal reply to Jagger's assistant with the sentence "by the way, please tell Mr. Jagger I am not Maurits to him, but, Very sincerely, M.C. Escher".





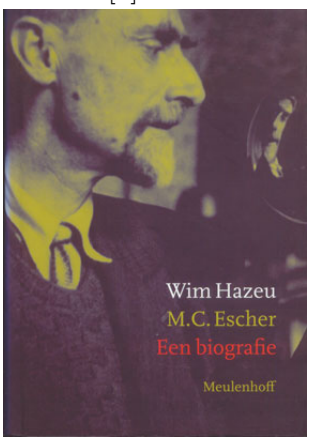


During a lecturing tour in 1964 he fell ill and retired. He was never able to give the lectures he had prepared very carefully.

His last years are described as follows.

> When Escher's view of the world turned inward he produced his best known puzzling prints, which, art aside, were truly intellectually playful, yet he was not. His life turned inward, he cut himself off and he had few friends. ... He died after a protracted illness...

I bought my first book with a collection of Escher reproductions in 1981 which was the best-selling Meulenhoff edition of 1971 with the brown cover [2]. I have two of his prints framed and hung up on a wall in my house. Later, I got as a present a more complete collection also published by Meulenhoff in 1981 edited by J.L. Locher [3] and which became also available in English in 1982 [4].



But there are many other books that appeared about his work of course. For example Taschen republished in 2001 an old collection of 1959 [5], and the well known book by B. Ernst of 1976 [6], which is a kind of biography and which has been translated in several languages [7,8]. The cover of the German edition shows Escher's last work with the snakes. And there is of course Hofstadter's well known Gödel, Escher, and Bach of 1979 [9].

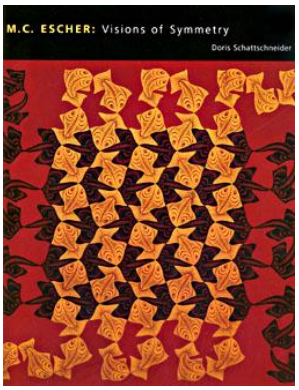
In 1985 there was a first conference in Rome dedicated to Escher's work [10], and an exposition [11].

Because of the centennial celebration in 1998, a new biography by Wim Hazeu came out [12]. There was also a conference held in Rome completely dedicated to Escher. The proceedings of this conference is the direct incentive for writing this note because I have just ordered and received the Springer book together with the video tape that are mentioned at the top of this note.

The proceedings contain three parts: Escher's world; Escher's artistic legacy; and Escher's scientific and educational legacy. In the first part nine contributions sketch the ideas and the origins of the magical world that Escher has created, the places where he has lived in Italy, his relation with mathematics, etc.

In the second part, 18 contributions are written mainly by artists who were influenced by Escher's work or had similar inspiration. Here the CDROM that is included is most helpful in showing color plates and many more images of the work from these artists that are not included in the printed

pages. But the CDROM contains also several movies, which can explain much better the techniques that were used by Escher and others to produce their artwork.



The third part of the book describes some of Escher's geometric constructs, computer games based on his ideas, tessellation rules, generalizations to 3D, etc. Here, little but still some, mathematical knowledge is welcome. The book clearly illustrates the enormous impact that Escher still has on people with quite different backgrounds.

The video is often filming a close up from Escher's prints which make you, as an observer part of this magical world. You are made part of it. That is a special experience, but the quality, both of the sound and the image of the tape is not so good, which is somewhat frustrating.

Those of you who are Escher addicts, may appreciate the official M.C. Escher web site [14], or the web site of the permanent Escher museum [15] in The Hague. Also the web site Escher and the Droste effect [16] is a pleasant one.

References

[1] M.C. Escher, Regelmatige vlakverdeling, De Roos Foundation, Utrecht, 1958.

[2] J.L. Locher (ed.) De werelden van M.C. Escher, Meulenhoff, Amsterdam, 1971.

[3] J.L. Locher (ed.) Leven en werk van M.C. Escher. Het levensverhaal van een graficus. Met een volledig geïllustreerde catalogus van zijn werk. Amsterdam, Meulenhoff 1981.

[4] F.H. Bool et al., M.C. Escher, His Life and Complete Graphic Work, Random House, New York, 1982.

[5] Escher, M.C. (2001). M.C. Escher. Grafiek en tekeningen. Köln: Taschen (1st edition 1959, Zwolle, published by Erven Tijl)

[6] B. Ernst, (1976). De toverspiegel van M.C. Escher. Amsterdam: Meulenhoff, 1976.

[7] B. Ernst. The magic mirror of M.C.Escher. Ballantine 1976; reprinted by Taschen 1994.

[8] B. Ernst. Der Zauberspiegel des M.C.Escher. Berlin, Taco 1981

[9] D. Hofstadter, Gödel, Escher, Bach: An eternal Golden Braid (New York, 1979).

[10] H.S.M. Coxeter, M. Emmer, R. Penrose and M.L. Teuber (eds.), M.C. Escher : Art and Science, North Holland, Amsterdam, 1987.

[11] M. Emmer, V. van Vlaanderen (eds.), M.C. Escher : Art and Science, The Dutch Institute, Rome, 1985.

[12] W. Hazeu, M.C. Escher, een biografie, Meulenhoff, 1998

[13] D. Schattschneider, Visions of Symmetry: Notebooks, periodic drawings, and related work of M.C. Escher, W.H. Freeman, New York, 1990, (2nd edition: Harry N. Abrams, New York, 2004).

[14] M.C. Escher, J.W. Vermeulen, Het oneindige, M.C. Escher over eigen werk, Meulenhoff/Landshoff, Amsterdam, 1986 (translated as: Escher on Escher: Exploring the infinite, Harry N. Abrams, New York, 1989).

[14] M.C. Escher Foundation, Official M.C. Escher web site `http://www.mcescher.nl/`

[15] Paleis Lange Voorhout, Den Haag `http://www.escherinhetpaleis.nl/`

[16] Escher and the Droste effect `http://escherdroste.math.leidenuniv.nl/`

Adhemar Bultheel