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Ideas of Space: Euclidean, Non-Euclidean, and Relativistic
by Jeremy Gray (review)

David W. Brisson

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aware and question some of our premises. This questioning is interesting and valid and should be of interest to almost anyone teaching, writing or painting.

Very careful planning and research went into this document. This publication is tastefully presented with 6 black and white illustrations. It is in French with an English translation. The French reads fairly easily—the translation is awkward. Some editing for both texts would make for easier reading.

Goncharova: Stage Designs and Paintings. Mary Chamot. Oresko Books Ltd., London, 1979. 104 pp., illus. £8.95. ISBN: 0905-368525. Reviewed by **Anthony Parton***

This is Mary Chamot's second book on the Russian artist Natalya Goncharova, 1881–1962 (her first was the French monograph *Goncharova*, Paris, 1972). Chamot, a distinguished art historian and Russian scholar, is the acknowledged authority upon Goncharova, and was a personal friend of the artist's during her later years.

The introduction gives an authoritative over-all view of the Russian cultural scene and presents the most detailed account to date of Goncharova's life and art. The author dwells particularly upon Goncharova's collaboration with Larionov between 1907 and 1914, and describes the progression of bold formal experiments in Goncharova's paintings culminating in the rayonist anticipation of abstract art, as well as the various exhibitions that she and Larionov organised [here, on pp. 10–11, there are unfortunate misprints in the Russian for the Knave of Diamonds which should, of course, read Bubnovy Valet, not Bululyv. And the Donkey's Tail Osliny Khvost not Khvast]. Study is also made of Goncharova's lithographs for the poetry of Khlebnikov and Khruchenykh and of the close connection between futurism in literature and in the visual arts. The author clearly defines Goncharova's artistic position amidst the futurist hubbub of this complex period in the history of Russian art. At the same time, through well-chosen illustration and apt comment, she shows the important influence of the icon, the shop sign, and the popular print (*lubok*) on her subject's art.

Chamot recounts Goncharova's meeting with Fokine and Diaghilev during 1914 and discusses her subsequent costume and stage designs for the Ballets Russes. Special consideration is given to her designs for 'Le Coq d'Or' (1914), the unstaged 'Liturgie' (1915) and 'Les Noces' (1923). Chamot then comments on Goncharova's early 1920's lithographs for the publications of Zetlin, Roubakine and Anet, and traces the increasing geometrical simplification in Goncharova's abstract paintings of the time.

Diaghilev died in 1929 and the author dates from about this period a certain decline in artistic vitality, which was precipitated in later years by personal problems: Larionov's stroke in 1950 and the arthritis which, by 1958, had virtually crippled Goncharova. Chamot discusses the artist's theatrical designs over these later years before concluding with the heroic triumph over ill health when, inspired by the first 'Sputnik' in space, Goncharova painted about 20 abstract works, three years before her death in 1961. The whole is told with quiet authority and contains much information on the dates and histories of individual paintings.

Throughout the text are frequent references to the 104 illustrations which form the main body of the work (pp. 25–104). Each of these is accompanied by essential information and an interesting explanatory paragraph. There are over 40 reproductions of paintings in the many styles in which Goncharova worked throughout her life. Interspersed with these are reproductions of costume and stage designs for 16 ballets, including 'Le Coq d'Or', 'Liturgie' and 'Les Noces'.

Finally there are 15 reproductions of Goncharova's book illustrations, some of which have unfortunately been enlarged from the original, something which, I understand, was not in accordance with the author's intentions. A disappointing feature of the book is that it contains only nine colour plates, but presumably it is thanks to this economy that the publishers are able to offer this immensely informative and representative book at such a reasonable price.

Prior to this publication, Goncharova's life and art were only known from diverse French and Russian sources, and for the English reader had to be surmised from the occasional article or references in general books such as the two general histories of Russian futurism by Markov and Gray. *Goncharova: Stage Designs and Paintings* is thus the first monograph on the subject in English, and is to be welcomed as an

important addition to our knowledge of one of the key figures not only of the Russian avant-garde and the Ballets Russes, but of the rapidly changing history of European paintings in the early 20th century.

Ideas of Space: Euclidean, Non-Euclidean, and Relativistic by Jeremy Gray, Clarendon Press, Oxford, England, 1979. ISBN: 0-19-853352-7. Reviewed by **David W. Brisson***

Gray's book is a clear, relatively simple survey of the mathematics, especially non-Euclidean mathematics, that form the foundation of contemporary relativistic physics. It is divided into three major areas. The first section deals with the early geometers, especially the Greek geometers, that serve as the foundation for modern mathematics. This section is scholarly, interwoven with anecdote, and easy to read without any mathematical background at all. The second section, that deals with the non-Euclidean geometries, is by far the most extensive part of the book, and requires a foundation in algebra and trigonometry to be understood. The final section deals with relativity, and requires at least some degree of sophistication in mathematics to be intelligible.

Although it is not altogether unreasonable to expect to find some artists and art students who have mathematical skills, such are not common, and it is likely that many artists and art students will not be able to follow the ideas of this book at what are some of its most critical points. Although there are a number of illustrations in this book, the book is not a visual work, and was certainly not written with artists in mind. Of course, in different parts of the world, a different level of mathematical preparation may be expected of the general student, but although the mathematical ideas are relatively simple, they are probably a little more complicated than what the average student is prepared to deal with.

The basic material of the book is not innovative but rather a solid documentation of the growth and development of geometry, particularly non-Euclidean geometry, that at the outset is readable and interesting. For the first eighty pages, it is narrative in style. After that point, although still fundamentally narrative, it becomes heavier in mathematical languages. All of the material of the work is standard material that can readily be found in other texts, although Gray has exercised careful selectivity to make much of the material more concise, and in some instances, clearer than it is generally presented. The book has the property of falling somewhere between a purely narrative book, and a strict mathematical text. It is not a long book, and does not take very long to read. It is a survey of sorts, that should be of interest to the college student who wishes to get a rapid, sound over-view of the subject, without being diverted into much speculative material.

The one area that might have been elaborated upon in more detail is the area of the descriptive geometry of four and more dimensions. This could have been profitably interwoven with the history of the non-Euclidean geometries, that form the substance of the geometrical concern. Even though the Minkowski geometry is not Euclidean in nature, certainly the development of four-dimensional geometry, particularly in the latter half of the nineteenth century and the early twentieth, laid the foundation for the acceptance of such ideas as the lightcone. The non-Euclidean geometries are admirably documented here, but a void which is perhaps historically misleading, occurs with this omission.

In any event, the book is well-written, of interest to the general reader with a basic mathematical background, and is of a sound technical and scholarly quality.

Health Hazards in the Arts and Crafts. Michael McCann and Gail Barazani, eds. Society for Occupational and Environmental Health, Washington, DC, 1980. 232 pp., illus. Paper. ISBN: 0-931770-01-7. Reviewed by **George A. Agoston****

This volume contains the proceedings of the First National Conference of the Society for Occupational and Environmental Health (SOEH) on Health Hazards in the Arts and Crafts. The papers are concerned with case studies of health problems, monitoring studies of studios and workshops, evaluations of the safety of art materials and governmental regulatory issues. While the scope of the topics is rather broad, many artists and art teachers will find papers of specific interest to them.

*148 Hilda Park, Chester-le-Street, Durham DH2 2JY, U.K.

*Box 85, Rehoboth, MA 02769, U.S.A.

**4 Rue Rambuteau, 75003 Paris, France.