

MUSICOLOGICAL STUDIES & DOCUMENTS

32

HIERONYMUS CARDANUS

(1501—1576)

WRITINGS ON MUSIC

TRANSLATED AND EDITED

WITH AN

INTRODUCTION BY

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PREFACE

It is a great pleasure to make this small contribution to an understanding of the musical concepts of Jerome Cardan, one of the most versatile and fascinating minds of the Renaissance. Current studies of Cardan's philosophical, scientific, medical and mathematical works give ample evidence of the recognition that Cardan now enjoys as an outstanding representative of Renaissance thought – a Renaissance man *par excellence*. In philosophy, for example, it is said that “Cardan mirrors every variety of Renaissance wisdom.”¹ His *Ars Magna* (1545)² is a mathematical work comparable to *De Revolutionibus Orbium Coelestium* (1543) by Copernicus and *De Fabrica Humani Corporis* (1543) by Vesalius. It is considered a masterpiece of science and a milestone in the history of mathematics. Although in his day Cardan was renowned throughout Europe as a successful physician, it is only in recent times that he has been credited with certain medical discoveries, as for example his description of typhus fever.³ Finally, Cardan's book on games of chance, a work resulting from his inveterate love of gambling, is called the first text on the theory of probability.⁴

Cardan wrote extensively about music, although it forms only a minor part of the ten volume edition of his works published by Sponius in 1663. Most of his references to music in that edition, with the exception of the short *De Musica* in volume X, occur in the course of discussions of other topics. Yet this material, found in Part III of the present edition, contains certain information unknown in any other source, as for example the biographical data on Gombert, Phinot, and Carpentras. Cardan's other work on music, also called *De Musica*, is a 56 page manuscript which represents his major contribution to the theory of music.

¹ Eugene F. Rice, *The Renaissance Idea of Wisdom* (Cambridge, 1958), p. 166.

² *The Great Art*, trans. T. R. Witmer (Cambridge, 1968), vii. This book contains “Cardan's rule”, an algebraic equation referred to in many dictionaries.

³ James Eckman, *Jerome Cardan* (Baltimore, 1946), p. 67.

⁴ Oystein Ore, *Cardano, The Gambling Scholar* (Princeton, 1953), p. 143. A translation of Cardan's text by Sidney H. Gould is found on pp. 181–241 of this book.

INTRODUCTION

Hieronymous Cardanus, or Jerome Cardan, was born at Pavia in 1501. His father, Fazio, was a lawyer and mathematician who lectured at the University of Pavia. When Jerome was four the family moved to Milan, where his childhood was spent.¹ Considerable information concerning Cardan's entire life is available from his autobiography, *De Vita Propria Liber*,² begun in 1575 and completed shortly before his death in the following year.

Cardan relates that his earliest studies were in the hands of his father who instructed him in arithmetic, geometry, and astrology.³ The boy had a harsh childhood and was compelled to act as his father's page when the elder Cardan made business calls or lectured in jurisprudence and mathematics.⁴ Some respite in this hard routine came from music lessons the youth enjoyed through the efforts of his mother who secretly saved the necessary money, for the father was not privy to this instruction.⁵ Cardan's music teacher was Leo Oglonus, a venerable old musician who traveled about Milan in a colorful green cape giving instrumental and theoretical instruction in music.⁶ Cardan studied the recorder and possibly other wind instruments under Oglonus. In later years Cardan referred to his former teacher with kindly affection, not only because of his musical ability but also because of his probity and high moral standards. Cardan had an almost psychotic aver-

¹ Fazio Cardano had already lectured in mathematics at Milan in 1498 at the *gymnasium* Lodovico il Moro had founded. Here his fellow lecturer in music was the famous music theorist Franchinus Gaffurius. It is interesting to note that in the list of salaries the music lecturer had the lowest stipend, while Cardano received four times as much. See Luigi Cremascoli, "Note Storiche sulla Vita di F. Gaffurio," *Franchino Gaffurio* (Lodi, 1951), p. 91.

² In *Hieronymi Cardani Mediolensis opera omnia* (hereafter *op. om.*), I, 1; also in translation by Jean Stoner, *The Book of My Life* (New York, 1930; reprint 1962). The autobiography is a fascinating document, a kind of psychological study in which Cardan analyzes himself dispassionately and yet produces an intensely human portrait of his personality and career.

³ Stoner, *op. cit.*, p. 142.

⁴ Cardan relates that occasionally while walking in the street his father would stop him and use his head as a table while reading some long passage. Alan Wykes, *Doctor Cardano* (London, 1969), p. 18.

⁵ *Op. om.*, II, 13.

⁶ *Ibid.*, II, 177; also Angelo Bellini, *Gerolamo Cardano e Il Suo Tempo* (Milan, 1947), p. 37.

Part I
ON MUSIC

CHAPTER 1

In praise of music and its excellence

I do not consider that music should be esteemed for its antiquity or its glorious inventors, two reasons commonly given in laudatory introductions to the arts, but for its usefulness, excellence, subtlety, and value among other arts and disciplines. To be sure, this does not mean that music is inferior in age or the worthiness of its inventors.

CHAPTER 2

Principles and elements of music

1. Music is a discipline which teaches men to recognize the meaning of sounds and to listen to their differences. These are taken from five elements which are proper to sound itself and one which is suitable to silence and quiet. Those proper to sound are magnitude, volume, duration, quality, and their comparison.

2. The magnitude of a sound is its highness or lowness. These differences depend first of all on the largeness or smallness of an instrument. They also belong to proportions, but proportions are proper to quantities. All sizes of tones arise from these differences, so that it is clear that such a difference is the true magnitude of sound.

There is a sixth kind which shows an excellence of artifice and which offers pleasure and much usefulness. It is the composition of canons, as they are called, or of rules, in which using the same notes many sing the same melody or a similar one. Singers create a harmony such as in the following example, in which five persons sing:⁸⁴

Ex. 6

⁸⁴ Although Cardan gave no instructions for the solution of this canon other than the number of parts, experimentation shows that it is a very ingenious five-part round or circle canon. The original melody ended in m.5 of the transcription, and m.6 begins the repeat of the canon melody. By m.10 the last voice has sung the entire canon, although all voices could continue ad infinitum.

Do - mi - num pro no - bis ad Do - mi -
ad Do - mi - num ad Do - mi - num
Do - mi - num De - um no - - - strum
no - bis ad Do - mi - num De - um no - strum
strum ad Do - mi - num De - - - um no -
- - - um no - strum ad Do - mi - num
no - - - bis pro no - bis ad Do - mi -
ad Do - mi - num ad Do - mi - num ad
ad Do - mi - num ad Do - - - mi -
no - bis ad Do - - - mi - num
- mi - num De - um no - strum ad
ad Do - mi - num De - um no - strum ad Do -