

The Great Art

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Sex, Violence and Mathematics in Three Acts

Author's Preface

This play bears perhaps a slightly closer kinship to history than does a Hollywood film “based on true events.” Its central subject, the most famous mathematical feud in history, unquestionably took place. Girolamo Cardano and Niccolò Tartaglia, the chief antagonists of the drama, were historical figures, as were all the other named characters, with an obvious exception. On the other hand, over time their legendary, decade-long battle has become, well, legendary, and in real life it does not appear to have been quite so Borgian as certain modern accounts would suggest. Many of the stories writers and mathematicians pass on about the rivalry (and more generally about Cardano's life) involve—appropriately for the sixteenth century—bribes, poison, prison, syphilis and murder. Alas, virtually all these tales are of dubious genealogy, precisely apocryphal, if not supernatural. In our own times, the author of the more extreme versions (Alan Wykes in his book *Cardano, Physician Extraordinary*) not only extends Tartaglia's life by twenty years in order that his villain may fulfill his nefarious designs, but covers his tracks by eliminating the crucial reference to these episodes and planting untraceable citations.

It's sure fun.

And so I've tried to have my cake and eat it too. The chronology in *The Great Art* has been considerably warped to accommodate required events; in particular, in Act II

I've made two of Cardano's children significantly older than they would have been in real life. In Act III, hmm...Nonetheless, a considerable amount remains of the "true story." Girolamo Cardano did swear to Niccolò Tartaglia never to publish the latter's great discovery—the solution for the cubic equation. When he broke his oath by including the formula in his 1545 book, the *Ars Magna*, Cardano ignited the great feud even as he bequeathed to posterity the most important mathematical treatise of the century. At the time in question, moreover, public mathematical challenge matches were a required means of advancement in Italy—not to mention extremely popular with the citizenry—and the combats in the play took place much as described, at least as far as I am able to determine. I have gone so far as to include some of the original problems that were exchanged among the combatants and the verbal broadsides fired by Tartaglia and Ludovico Ferrari are adapted from their original manifestos. The events involving Cardano's sons and Ferrari likewise took place, Cardano's arrest as well, but any role Tartaglia may have played in them is invented.

Our knowledge of the "cubic affair" comes mostly from Tartaglia's account, found scattered among his mathematical works, but otherwise the life of the Brescian is obscure. Anyone wanting to learn as much as there is to know about him will have to resort to Italian; the most complete portrait I have found is Giovanni Gabrieli's *Niccolò*

Tartaglia, Ivenzioni, Disfide e Sfortune (Brescia, 1986).¹ Cardano, on the other hand, left among his voluminous writing an autobiography, *De Vita Propria Liber*, available in English as *The Book of My Life*, one of the Renaissance's most famous memoirs. Any actor attempting him will find infinite helpful, not to mention outrageous, details therein.

I have given historical dates in the cast list and stage directions, but they are not mentioned in the dialogue and are intended to be ignored.

¹ The St. Andrew University MacTutor History of Mathematics website is also recommended for all the characters: <http://www-history.mcs.st-and.ac.uk/>

Cast

Girolamo Cardano (CAR) (1501-1576)— One of the greatest mathematician of the sixteenth century. In his lifetime, Italy's most famous physician and astrologer. A native of Pavia, lived most of his life in Milan. In his own words, "A rather too shrill voice draws upon me the censure of those who pretend to be my friends, for my tone is harsh and high, yet when I am lecturing it cannot be heard at any distance. I am not inclined to speak in the least suavely, and I speak too often." Also: "Because I think as I walk, my gait is uneven, unless somebody claims my attention. My feet are moved, and often my hands, even, make gestures at the bidding of my restless mind." He stares fixedly, "as if in meditation."

Nicolò Fontana, called Tartalea (Modern spelling: Niccolò Tartaglia; TAR) (1499-1557)— Another major sixteenth century mathematician. A native of Brescia who lived his adult life in Venice. Known by his nickname, Tartalea, meaning "the stutterer," because he spoke with a severe speech impediment due to the near fatal sword wounds he received in his youth. Wore a heavy beard to disguise his disfigurement. Founded the science of ballistics. Discovered, independently of Scipione del Ferro, the solution to several

forms of the cubic equation. Despite his fame, he apparently lived in poverty his entire life.

Melencolia (MEL)—As she appears in Albrecht Dürer's famous 1514 etching of the same name. To be played in mime. "Mystery must be respected."

Ludovico Ferrari (FER) (1522-1565)—Another mathematician, student of Cardano. "A neat rosy little fellow, with a bland voice, and an agreeable short nose, fond of pleasure, with great natural powers, but with the temper of a fiend."

Antonio Maria Fior (FIOR)—Another mathematician, student of Scipione del Ferro.*

Giambattista Cardano (GIAM) (1534-1560)—Cardano's eldest son.

Chiara Cardano (CHIARA) (1536-?)—Cardano's daughter.

Aldo Cardano (ALDO) (1543-?)—Cardano's youngest son.*

Brandonia di Seroni (BRAN)—Giambattista's wife.

Maddalena Ferrari (MAD)—Ludovico Ferrari's sister.

A senator, the governor of Milano, servants, etc..

* Can be played by same actor.

The part of MELENCOLIA is given great latitude. She appears in almost every scene and, although in the background, needs to react to everything. It should never become apparent exactly what she represents.

The action takes place in sixteenth century Italy, from 1526 to 1576, at intervals. I assume virtual sets can be used for quick and continuous changes. Music should be, naturally, Renaissance brass music, especially for Act II, Scene V. The madrigal *Tutto 'l di piango* of Orlando di Lasso is suitable for Act II, Scene VII (available on Orlando di Lasso, *Villanelle, moresche e altre canzoni*, Concerto Italiano; Opus 111 CD). Alessandro Striggio's *Missa Ecco Si Beato Giorgio* for 40/60 voices (I Fagiolini, Robert Hollingworth; Decca CD) may also be suitable for certain scenes, in particular Act II, Scene V.

Mathematical Note

By “cubic equation,” nowadays we mean an equation of the general form

$$ax^3+bx^2+cx+d = 0,$$

where x is the unknown and a , b , c and d are some given numbers (for example $2x^3+7x^2+32x-8.3 = 0$). In the early sixteenth century the most important outstanding mathematical challenge was to find a solution to this equation, in other words to find a “cubic formula” analogous to the famous quadratic formula that every high school math student knows, one that gives the allowed values of x in terms of a , b , c and d . Most mathematicians of the age believed that to find such a solution was beyond the powers of human reason.

What’s more, the above is the most general form of the cubic equation, when all coefficients a , b , c , d are present. At the time of the play, mathematicians did not realize that every cubic equation could be written this way. They thought of $ax^3+cx+d = 0$ as a completely different equation from $ax^3+bx^2+d = 0$, although they are both special cases of the general cubic, the first with b set to zero, and the second with c set to zero. To convolute matters further, at the time negative numbers were regarded with much suspicion, and so the coefficients in these equations would all have to be positive. This meant that sixteenth century mathematicians regarded $ax^3+cx+d = 0$ and $ax^3+cx = d$ as entirely different equations. By way of terminology, any cubic with the x^2 term missing

is known as a “depressed cubic.” Dividing the last equation by a , we can write it as $x^3+ax = b$, for some new numbers a and b .

It is this form of the depressed cubic that Antonio Fior was able to solve in the play. Tartalea, in response to a friend, Zuanne de Coi, had several years earlier learned how to solve the type $x^3+ax^2 = b$ and, during his challenge match with Fior, he also discovered for himself how to solve the depressed cubic. Thus being able to pose problems Fior couldn’t solve, Tartaglia won the contest. (It is in fact easy to show that by a simple substitution you can always reduce the general cubic to the depressed cubic, and so solving the depressed cubic is the key thing. In the *Ars Magna*, Cardano does this, but for all the cases separately.)

To make matters even more complicated, in the sixteenth century mathematical notation as we know it did not exist and none of the characters would have recognized the equations as just written. In Italy, the unknown x was called “the thing” (*cosa*), and so the equation $x^3+ax = b$ went by the name “the *cosa* and the cube equal to a number.”

Act I

Scene I

The lights go up to reveal the chamber of a Venetian senator in 1526. Two men, GIROLAMO CARDANO and the SENATOR are sitting at a table, engaged in a furious game of primero, the ancestor of poker. Two SERVANTS stand by. Each player holds four cards, eight more are spread face down on the table for the draw. As the lights come up, the SENATOR is discarding two cards and drawing two. CARDANO stares fixedly at his opponent.

SEN (Knocking twice sharply on the table with his knuckles): *Vada!*

CAR (Throwing down his cards, face up): *Supremus! Quarantaquattro!*

SEN (Throwing down his cards): *Primiero! Cinquanta!*

(Laughing, the SENATOR attempts to reel in the pile of coins or a purse on the table.

CARDANO jumps to his feet.)

CAR: Son of a whore!

(He draws a dagger and slashes the SENATOR'S cheek. Grabs the money.)

SEN (To SERVANTS, claspng the wound): Seize him!

(The SERVANTS grab spears from the wall. CARDANO draws his sword. They fight.

CARDANO disarms the SERVANTS, throws the money into the SENATOR'S face and rushes out the door.)

Scene II

The street, along a canal. CARDANO is on the run, alternately concealing himself in corners, glancing over his shoulder. Upstage to one corner is a small room, only vaguely visible behind a scrim, or projected. An old CARDANO (CAR1) stands there, gray and bearded. A banner is visible bearing the motto TEMPUS MEO POSSESSIO. For CAR1, a statue or projection can be used, or just a voiceover.

CAR1: The studious man should always have at hand a clock to rule time
 and a mirror to reflect himself.

 What is time?

CAR: (Halting, as if to remind himself): Note for a future memoir:

 (Crying Triumphantly): Time is my possession!

 Not today.

Ecce buffone! The question is for disputation.

 (Begins to run again. To some four-square Renaissance brass music):

 Time draws no breath.

 Time can be lost.

Time can't be gained.

Time authors life.

Time authors death.²

(Halting again): Mine presently.

(Glances over his left shoulder. Then, as a rap):

Tintinnabulation,

In my left ear, that aural titillation,

Ever guaranteeing my life's extension.

Yes, I hear you! The *polizia* are after us! *Porca vacca!* Which way?

That way? Never! You know I am afraid of places where mad dogs have been seen. Thither? *Bene. Andiamo!*

(Growling angrily): Tick-tockin' along, barely singin' a song,

(With real concern): Who will perpetuate the glory of my name?

(He suddenly halts, bites himself on the left arm, then draws his sword and looks into the blade or into waters of canal.)

Mirror, mirror before which I stand,

²Alt. (if no music):

In time nothing draws breath.

Naught to time belongs,

And though time may easily be lost,

It can never be repaired.

Time is the author of life and death.

Is there an uglier mug in the land?

(With a threatening finger toward his left shoulder): *Silenzio! Silenzio.*

Oimè, my features are so commonplace that painters break their brushes
trying to distinguish me.

I might have been born a monster.

Mother! You attempted to abort me, vain medicaments.

The malfics stood outside the angles,

But Mars opposed Mercury

to cast evil over the luminaries.

Hermes triumphed and I emerged—

black, curly, to be submerged

into a bath of warm wine.

A baptism for killing children designed.

Me—fortified!

Jupiter ascended, Venus ruled,

Providing a healthy genotype.

I popped into the world unmolested—

A single exception—my genitals.

Five long years I've been flaccid,

Unable to lie with women—fuck.

I am cold of heart and warm of brain.

Timid of spirit, ready to aggravate.

Prone to meditate, alone, in rain.

(Jauntily): I am curious, magnanimous, lascivious, ingenious,
envious, industrious, voluptuous, mysterious ...

I venerate God. Of more importance, I have cured myself of hemorrhoids.

Another thing:

At vindicta bonum vita incundus ipsa.

Vengeance is sweeter to me than life itself.

(CARDANO preens himself in front of his sword blade again and slips into the canal.)

CAR: Help!

(Toward his left shoulder): Yes, I know I can't swim. I'll be rescued?

Thank you, I foresee this. Enterprises I have undertaken before the full
moon have always turned out successfully.

(Enter the SENATOR, bandaged, being rowed in a boat by his SERVANTS. He offers a
hand to CARDANO, who struggles aboard. When CARDANO recognizes the
SENATOR, he cowers at the front of the boat. One of the SERVANTS makes a move
toward him. CARDANO surrenders.)

CAR: I am yours, Senator.

(The SENATOR waves down the SERVANT and offers CARDANO some dry sailor's

clothes.)

SEN: No, I am yours. You caught my deception and my cheek. Don't worry, the wound isn't serious. But how did you know?

CAR: In this case simplicity itself—your cards were marked.

SEN (Chuckling): Doctor Cardano, your reputation as a gambler is deserved. I have heard that no one rolls the dice with better skill.

CAR: *Serenissimo*, I cannot accept praise for my immoderate addiction to the dicing table, but I blame the refuge on the calumnies of poverty and dishonorable men.

SEN: Dishonorable?

CAR: Bastards who have blocked my advancement because of the circumstances of my birth...My parents were...not wed at the time.

SEN: Ah.³

CAR: *In qualsiasi caso*, to pay for studies requires gold. If I show skill, it is only because, despoiling myself daily, I have had the opportunity to observe

³ Alt (more obvious):

CAR: Scoundrels who have blocked my advancement because of the circumstances of my birth...My parents were not wed at the time.

SEN: Ah.

CAR: They are bastards.

SEN: I'd say you are.

the dice fall. To the man who would see it—me—these patterns reveal a science.

SEN: I have always believed that shaking the dice vigorously was the key to success.

(Gets dice from SERVANT. Shaking them hard): Angel of God, guide these bones...

CAR: Some people wear pearls.

I say dice fall unfavorably because Fortune is adverse.

And because Fortune is adverse, the player throws the dice timidly.

SEN: Meaning?

CAR (As if reasoning it out): One does not lose because one rolls the dice timidly. One falls into poverty and disgrace because one fails to take into account all possibilities. In placing a bet you must consider the total number of ways the dice can fall. Knowing this, you can compute the probability, the ratio of favorable to adverse Fortune.

SEN: Probability...Would Leonardo have thought such a thing possible? How many ways can the dice fall?

CAR: I say thirty-six. For two dice.

SEN: How so?

CAR: Six throws with like faces...

SEN: Snake eyes, two deuces...

CAR: ...and thirty throws with unlike faces.

SEN: One and two, one and three, one and four—

CAR: Do not forget two and one.

SEN: Is not the doctor counting twice?

CAR: (Handing SENATOR a coin): Ah. *Amplissimo*, if you toss a single coin twice, how many heads are possible?

SEN: (Tossing it): This is obvious: zero, one or two.

CAR: Are all possibilities equally favored?

SEN: I should think so.

CAR: Many have fallen into such errors, which is why gamblers bankrupt themselves. Gambling is, of course, one of the five vices that bring a man to ruin, hardly worse than luxury, lawsuits, alchemy and architecture.

SEN & CAR (Rapping):

The alchemist says I'm gone ta change lead into gold,

With the help of the ye-old philosopher's stone.

The gambler ain't no better if you stop and behold,

Rollin' bones forever leads ta nothin' but moans.

The lawyer's a bastard, easily bought, mostly sold,

The architect thinks he's smart, accepting sky-high loans.

But luxury begets usury and everyone finally — groans.

SEN: (Laughing): Surely, Doctor Cardano, something must relieve your misery.

CAR: I find it helpful to think of the misery of those who cause my melancholy.

SEN Creditable. Wither are you bound?

CAR: Padova, *Amplissimo*.

SEN: Wonderful! As luck would have it, I'm bound thither myself. Allow me to take you. By the way, I have been recently suffering from black bile and exhaustion. What can you prescribe?

(As they sail off):

CAR: Black bile is of course melancholia from the spleen. You must relieve yourself from the pressures of high office. Get a good night's sleep. In the morning, be sure to move your bowels. If this is not possible, prepare an enema from dog's mercury and strawberry blight. Add some honey and a pinch of salt...

(Exeunt.)

Interscene

CAR1: Of those who have attempted to harm me, not one has gone beyond the basic elements of grammar. I cannot understand by what impertinence they have slithered into the ranks of the learned — snakes.

Scene III

The Rio dell' Arsenale (canal running by the shipyard) in Venice, c. 1535. The Arsenale gates and towers provide a backdrop. Enter NICOLÒ TARTALEA, mumbling to himself while moving towards the gates. A few distant, regular cannon shots may be heard. Enter two ARSENALOTTI, arsenal workers. They are rushing out of the Arsenale to a Venetian bridge battle (*battagliola sui ponti*). Each wears a helmet and is armed with a cane sword and a wooden shield. They can be masked as well.

TARTALEA stutters severely or slurs his speech. I indicate this for the first few lines; afterwards it is made explicit only for emphasis.

AR1: (Shoving TAR): Make way, man!

TAR: (Stubbornly): I—I h—have b—business here.

AR2: (Mocking TAR): I—I h—have b—business here. What business could you have at the Arsenale, stammering idiot? Out of our way!

TAR: Y—yes, m—mock me, c—call me T—Tart—alea, the s—stutt—er—er! I—I have p—proudly w—worn it! A b—better f—fit than th—these cl—clothes. N—now l—let m—me p—pass, s—scabby dogs!

AR1: How dare you! Get back into the ghetto, flea-bitten Jew.

(They begin to beat him with their sticks. As TARTALEA sinks to the ground, they run

offstage.)

TAR (Shouting after them): Jew? *P—Puttane*, I—I spit on you! Y—you w—
will s—sooner die on your b—bridges than k—kill T—Tartalea!

(Enter MELENCOLIA, with angel wings etc., exactly as in the Dürer etching. She leads on ANTONIO FIOR, who, however, seems unaware of her presence. FIOR carries rolled up broadsheets beneath his arm. She points out TARTALEA and FIOR helps him to his feet.)

FIOR: Messer, I have been scouring the city for you. What have they done?

TAR: Nothing Signore, nothing that will be remembered.

Scum to their rumbles.

What would Venezia be without fists and swords?

(MEL, seated as in etching, agrees with him)

TAR: (Shouting): What would Italy be without invasions?

(Again MEL agrees with him)

TAR: War is the finest persuasion. It makes us hard.

FIOR: But, *Eccellenza*, why do you sit here, crumbled before the arsenal
in such choleric humor?

TAR: You'd prefer melancholic?

(MEL nods agreement.)

TAR: Signore whoever-you-are, the gunners asked me to further their art.

They'd learn the elevation to fire their cannon for greatest effect.

I much blushed and regretted the time I spent on this,

And burned my calculations.

It seemed to me such pursuits, teaching humans how to destroy one another, deserved God's punishment.

But now that the Turkish wolf intends to ravish our flock,

While each of our shepherds hastens with lock and shield,

I may no longer keep these matters hidden,

And I will fit every faithful Christian with means

to repel the fearsome Ottoman.

FIOR: What are *Eccellenza's* results?

TAR: Forty-five degrees will hurl a ball farthest.

(MELENCOLIA plays with a carpenter's square, as if measuring the elevation of a cannon.)

FIOR: No!

TAR: *Si!*

FIOR: No! Surely firing a gun nearly level to the ground must give the greatest range. How did *Eccellenza* achieve his incredible conclusion?

TAR: Mathematically. By considering the violent motion produced by the powder and the natural motion that causes a ball to fall to earth.

(A diagram of Tartalea's trajectories may be projected (see Appendix B, figure 2) and MELENCOLIA may indicate to the audience with a laser pointer, as if lecturing.)

FIOR: But our cannons claim that balls fly in a straight line until the very end, when they fall. Is this an illusion?

TAR: An approximate illusion. What common people call straight is only due to the ball's extreme speed. But the air's resistance causes it to lose its vigor and curve downward at every instant. Of the result there can be no doubt: forty-five degrees. I am the first to apply analysis to artillery. A new science. Now the bombardiers will put my claims to the test.

FIOR: Not today, *Eccellenza*. A bridge battle is underway. I passed by your home, searching for you. Go there; your students are waiting.

TAR: Signore, you have rudely not introduced yourself, and what are you carrying beneath your arm?

(MEL gestures to FIOR to post a broadsheet. He does so, "Fior v Tartalea," then bows to TARTALEA.)

FIOR: *Eccellenza*, I, Antonio Maria Fior, publically challenge you, Nicolò Tartalea, to a dispute.

TAR: Signore?

FIOR: *Eccellenza*, I'll speak freely. Your fame in Venezia and beyond grows daily. Your success in the open arena is known to all. If I best you, I

advance myself.

TAR: I've heard of you, Signore Fior.

FIOR: I am pleased.

TAR: You are a *coglione* searching for a job. That is the only reason you have the impertinence to challenge me.

FIOR: Do not speak incontinently, or Messer shall regret it!

TAR: I'll waste no breath blowing petals from flowers. Begone!

FIOR: The whole world will know you for a coward, who would not face Antonio Fior!

TAR (Turning away): A coward for not facing you? Bah!

FIOR: B—bah! I hold the secret, M—Messer T—Tartalea.

(TARTALEA turns around.)

FIOR: I am the only man who can solve the *cosa* and the cube equal to number!

(On a supertitle is flashed the equation $x^3 + ax = b$.)

TAR: You are an empty windbag, Signore. No one possesses the solution to the *cosa* and the cube! Fra Luca himself declared a solution to the *cosa* and the cube to be beyond the powers of human reason; it is certainly beyond yours.

(MEL begins considering and dividing a *large* cube with a compass; see Appendix B, figure 3. She can also illustrate the following by pointing to the terms in the equation.)

FIOR: The *cosa*—the thing.

TAR: T—the v—very v—very t—thing,

FIOR: The unknown thing to be found.

TAR: T—to be f—found.

FIOR: Cube it, add it, set it equal to a number.

TAR: T—that's the *c—cosa* and the *c—cube*!

FIOR: The *cosa*, the cube!

TAR: The *c—cosa*, *c—cube* equal to a *n—number*.

(They arrive at Tartalea's door.)

FIOR: Messer, I propose thirty problems to be judged impartially after two months. The loser pays for thirty banquets for the winner and his friends.

(MEL in alarm tries to persuade TAR to refuse by indicating that he is too poor to risk it.)

TAR: (Working himself into a rage): Signore Fior, you are a blowhard! A brazen braggart! I will expose you as an imposter! *Cosa* and the cube, bah! Mongrel dogs kick me off bridges! They are unworthy to lick my boots! Get out of my—! How dare—!

FIOR: You are a bitter man, Nicolò Tartalea.

(MEL agrees, sadly. She can also mime or react to some of the following.)

TAR: My father, Micheletto, a humble postman of Brescia,

Was ambushed, murdered by the French for letters he never carried.

At six I was orphaned of him.

I never knew his surname.

Six years later, the rebellion the French feared burst into flame.

The invaders put to the sword the whole town, fifty thousand I think.

No sanctuary was provided by the cathedral to which the people fled,

or by angel wings.

A soldier cut open my skull 'til you could see the brain,

And put a sword through my jaw, leaving me for dead.

My mother nursed her son but could afford no physician.

He survived, with this stutter so marked,

That marks him for a fool in so many eyes,

And the beard he wears to hide those marks.

His parents had sent him to school to learn his abc's.

He proved no fool, but the money ran out at "k."

He could not even write the initial of his name!

I have taught myself everything, Signore! Everything!

You are surprised I am hard?

Now, I have no more time to waste with you. My imbecilic students await

their lessons. Maybe the blockheads can be taught how to add two and

two.

(Exeunt.)

Interscene

CAR1: The most extraordinary—if quite natural—circumstance of my life is that I was born into an age in which the whole world became known.

America! Brazil! Patagonia! Parana! Caribana!

What is left for an explorer to discover?

Scene IV

Cardano's house in Milan, same time period. The rooms are very poor, nearly empty of furniture. CARDANO is at prayer. MELENCOLIA is hovering around, gazing mournfully at the various instruments geometrical objects scattered around the stage, as in the etching. She takes models of the sun, moon and earth, places them on the stage, scratches her head, begins measuring the distance between them, trying various methods: pacing, string, quadrants. LUCIA is played offstage.

CAR: Lord, send me a dream tonight so that I may better treat Signora Rigona's foot ailment. The cause of her affliction baffles me. What am I to do?

(He rises and goes to his desk.)

Note for a future memoir: There are one or two things left to discover.

(Slamming his fist on the desk): How to solve this damnèd equation!

Further, no proof has been given that demons really exist, or even if they do exist that we could control them by a pact. If demons exist, they probably function on a higher mental plane than man and scarcely comprehend our vain ambitions and insignificant achievements.

(MEL looks up from her measurements to express agreement.)

CAR: On the other hand, I see no reason to believe that attendant spirits are nobler in character than man's intellect.

(MEL shoots him a warning.)

CAR: What is the humming in my ear? Is my guardian angel speaking?

(MEL pays no attention, continues her measurements.)

Does some calamity approach?

(MEL, without breaking off her studies, shrugs.)

Calamity is fulfilled! Look at these rooms.

With my accursed gambling I've brought my family to ruin!

(MEL shakes some dice at him, hurls them away.)

CAR (Clearing out his left ear with his finger):

Yes, there is only one way out: Death to the College of Physicians of

Milano! How do they expect me to survive by lecturing on mathematics?

They're squeezing my balls. I'll write a book on their sham practices—
imposters! The sons of bitches'll think again about barring me merely
because my father forgot to wed my mother until the last year of his life.
Minor oversight...

To hell with them! I've never met anyone, here in Milano or anywhere
else, who was my equal in disputation. My *Prognostico* is selling well,
thank you. Mars and Saturn conjoined in Aries, those strange birds in
Alessandria, the new comet, the thunderbolt that toppled the tower down
the street—it can mean only one thing:

Complete destruction of the Christian and Muslim faiths.

Don't worry; it won't happen 'til a few years after we're dead.

And rest assured, there will be snow in the Alps this winter.

Take that, competitors too ill-bred to read the Alphonsine tables.

(MEL acts out above and reacts to it skeptically.)

CAR: (Demonstrating): Best of all, my impotency is cured!

(MEL acts the part of the girl, with some irony.)

One night, I dreamt I was in a garden of beauty unsurpassed,

Gay with flowers and ripe fruits beckoning.

A gentle breeze played, ceaselessly murmuring.

No painter could have writ anything so lovely.

No poet could have captured it in song.

A gate stood open and, lo, a maiden in white, shining.

I seemed to embrace, to kiss her; mayhap only attempting.

At the first caress, a gardener seeing my progress,

My access swiftly barred.

Scant days later I saw from the street a maiden,

Who resembled perfectly in form and face the girl of my dreams.

Impotent no more!

But me, a pauper, shackled by poverty!

What the hell: I married her.

LUCIA: Yes, what the hell? Girolamo, help!

(CARDANO hears the *very* loud buzzing of a wasp and runs offstage to LUCIA. MEL reacts to what follows.)

LUCIA: Why are you standing there like a beggar with your mouth open?

Salvami!

CAR: *Mirabile dictu*, the wasp is not stinging anyone.

LUCIA: Must I croak before you'll do anything useful?

CAR: I'll save you, Lucia.

LUCIA: The way you've saved my jewelry and the furniture?

CAR: Have no fear, someday you will be clothed in fame and riches, my love.

And so will my precious Giambattista.

The wasp has vanished, but where?

(Enter CARDANO, carrying infant.)

And on the very day of my son's baptism! Such a portent of evil!

CAR1: Yes, but on that day I could not see the full manifestation of that
unfortunate union, of my dream, of the maid on the street.

(The loud sound of magpies is heard.)

CAR: Those magpies portend something too.

(A knock on the door. CARDANO distractedly answers as the infant wails.

MELENCOLIA ushers in LUDOVICO FERRARI.)

FER (Bowing): *Buongiorno*, Signore.

(CARDANO stares in puzzlement. Absently hands infant to MEL, who carries it
offstage to LUCIA.)

FER: Ludovico Ferrari, Signore. Signore remembers, doesn't he, my uncle was
to send me as a famulus?

CAR: *Dio mio*, I'd forgotten. Enter, boy. Uh, sit there. *Madonna, aiutami*, how
can we afford to keep another servant?

(FERRARI sits abruptly at the table and begins to examine Cardano's papers.)

FER (Sullenly): I can be your scribe, Signore.

CAR: You have passed your *grammatica*?

FER (Nodding): And I know my sums.

CAR: Truly?

(FER begins adding numbers, as if bored.)

FER (Abruptly): You have a crucifix on your wall.

CAR: You don't?

FER: Father says it's all *controsenso, sciocchezza. Laudamus te* and fleece the people like criminals on a Turk's stake.

CAR (Taking a step back): Watch your tongue, boy! The Church takes a dim view of such speech!

FER: The Church can take a shit.

CAR (Cautiously): Do you know the abc's of geometry?

FER: I have heard that $c^2 = b^2 - a^2$, or maybe it is $b^2 = c^2 + a^2$; perhaps—

(MEL is attempting to correct him.)

CAR: That will do. (He sits with FER.)

Ludovico, can you solve this equation?

FER: Three times the *cosa* plus sixteen is four. If I take away sixteen, that would mean the *cosa* is negative four. You are trying to trick me, Signore. How can the *cosa* be negative?

CAR (Aside): This boy is a prodigy. (To FER): The *cosa* can't be negative. All real things in this world—length, area, sums of money—are positive in

magnitude.

FER: Is mathematics tricking us?

CAR: (After a beat): Come Ludovico, have something to eat, if we can find anything. *Oimè*. We own the wealth of a turtle, which wears all its possessions on its back...Tell me, the *cosa* and the square, can you solve it?

(FER shakes his head fiercely.)

I shall teach you and you shall assist me.

(He begins to lecture. Picking up from her initial dance in this scene, MEL acts out the speech as she continues her measurements.)

Love, no; geometry rules the cosmos.

In this age we have begun with reason

To reduce the entire world to geometry.

The flight of cannonballs—geometry.

The measurement of time—geometry.

How do we attain that imagined realm,

Imagined beyond the world of the senses?

It is far...! I tell you, far!

(MEL acts out the last lines with sympathy.)

Young Ludovico, together we shall write a great treatise explaining all the mathematical knowledge man possesses. It will include the *cosa* and the

square; it must include the *cosa* and the cube. *Porca Madonna!* I am unable to solve the *cosa* and the cube! The ancients with sticks and sand found the solution to the *cosa* and the square.

($ax^2 + bx = c$; $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$ is projected.)

But the cursed *cosa* and cube has defeated the finest minds for thousands of years! Ah, those dark ages...! It may be no more possible than squaring the circle! God is laughing...

FER: What is this stupid *cosa* and the cube good for, Signore?

(MEL gestures "naturally, I expected that.")

CAR: Good for? The pursuit of knowledge elevates the spirit and the soul. It is the noblest endeavor of man, young Ludovico. But be assured, someday this equation will change the world.

FER: Then someone will tax it.

CAR: Decidedly so. I foresee all this; take it from me, I never err about such things. I'd sell my soul to the Devil to possess the solution to the *cosa* and the cube.

(FERRARI kicks a black cat out of the way. Blackout.)

Interscene

CAR1: Man, among all creatures, is most enslaved by the pleasures of love, due to the great heat and moisture of his body. Only birds surpass him in this, since they ejaculate little semen, and their testicles are inside the body. Due to their intellectual activities, intelligent men are less enslaved to Venus, because study dissipates the animal spirits and directs them away from their genitals. Such men beget weak children, who bear no resemblance to them. They will greatly benefit from associating with beautiful women, reading love stories and putting up pictures of beautiful maidens in their bedrooms...

Scene V

Tartalea's rooms, two months after his meeting with FIOR. TARTALEA is alternately sitting and pacing with papers in his hand, unable to remain still. MELENCOLIA sits in the corner, watching. She gets up and paces behind him, fingers his clothes, sadly. She offers him some fruit from the table, but he doesn't notice. She hikes up her skirt, but he pays no attention. She goes back to the corner, picks up the hour glass, as in the etching, watches the sands, places the glass on the table, returns to the corner and continues watching.

TAR (To Heaven): Very Calm Lord in Heaven, old friend, you are jesting with me—always.

Your first prank, my grievous impediment. Shorn of this beard... I am a monster, I know. I speak like an owl. No pretty young wife to be mine. Only Domenica consented—no maiden she, she came with a dowry of three—girls.

(Bitterly): She thought me tetched! She could not comprehend my curiosity, the delight in exploring unknown worlds. Would my tongue command the eloquence to express it. Would I command my tongue!

(He chokes.)

We had one child of my issue. We had poverty. Poverty had us.

I dream now only of ghosts.

In the *lingua franca*, *Fortuna* is the word for storm. So it is.

Your latest jest—Fior! I know, this is a test. Your favorite pastime.

Scholars admire me to my face and mock me to my ass. Pissers. Our astrologers will prophesy that the outcome of this contest depends on the new comet. How could it be otherwise! Perhaps the starry messenger will shower us with the solution to the *cosa* and the cube.

(Glancing at papers):

“A man sells a sapphire for 500 ducats, making a profit of the cube root of

his capital. How much is the profit?"

(The equation $x^3 + x = 500$ is projected on the supertitle.)

(MEL scribbles on a slate, scratches her head.)

TAR: "There are two bodies of twenty triangular faces, whose corporeal areas added together make 700 *braccia*, and the area of the smaller is the cube root of the larger. What is the smaller area?"

(The equation $x^3 + x = 700$ is projected on the supertitle.)

(MEL clasps her head between her hands.)

TAR (Throwing down the papers): They're all the same! This Fior can shoot only one wad! He knows nothing beyond the *cosa* and the cube! The simpleton doesn't have the brain of a flea on a chain. He could no more have solved this equation than I could sing in the Pope's choir; somehow he must have the solution! I don't! When my friend in Verona, Zuanne de Coi, set me two problems, I discovered by hard thought how to solve the cube and the square.

(The equation $x^3 + ax^2 = b$ is projected on the supertitle.)

If Fior can't do that, he is lost...

If I cannot solve the *cosa* and the cube, I am lost.

The world is geometry. A cube's side cubed is its volume. The *cosa* cubed is the volume of a cube. Geometry! Picture it as we picture God above us!

There must be a way to divide the volume to write it as the *cosa* and the cube.

(MEL busies herself dividing a *big* cube by three planes into a large cube, a small cube, three slabs and three bars, as in Appendix B, figure 3.)

TAR: Y—yes, this may work...

(He sits at a table and with MEL standing over his shoulder, begins drawing, then writing.)

E—Eureka! I—have found it!

F—Fior, you are mine!

Interscene

CAR1: They call me the Man of Discoveries. By painstaking efforts, I advanced the science of arithmetic tenfold. But the stutterer preferred to find in me a rival—who was a better man than he—rather than a colleague bound to him by gratitude and, above all men, his most loyal friend.

Scene VI

An ornate room, with a bench or tribunal in the center. A JUDGE sits at the bench. Before him stand FIOR and TARTALEA. MELENCOLIA stands off to the side.

JUDGE: Signori, the judges have reviewed your solutions. Signore Fior, you have correctly solved only one of Signore Tartalea's problems.

(MEL parades a "Thumbs down" sign before the audience.)

JUDGE: Signore Tartalea, we do not perceive by what means you reached your solutions to Signore Fior's problems, but the judges have been able to check your answers. Every one is correct.

TAR: Once I saw the key, it took me all of two hours.

JUDGE: The judges hereby declare Nicolò Tartalea the victor!

(MEL parades an "Applause" sign before the audience. TARTALEA takes a bow to the sound of trumpets.)

FIOR (Bowing to TAR): I am forfeit thirty banquets, Messer.

TAR: I would not face you across a table once, yet alone eat goose with you for half a year. Leave me, Signore flower!

(Exit FIOR.)

JUDGE: Would Signore Tartalea care to divulge the secret of the *cosa* and the cube he used to arrive at the answers?

TAR: Never! It will prove a far greater fortune than thirty banquets!

(Exeunt.)

Interscene

CAR1: It has been my lot to be attended by a good and compassionate angel, and all that I have achieved in life has been through the channeling of this spirit. He has truly and accurately forewarned me of approaching dangers, such as in the affair of my son; I confess that once or twice I failed to heed him at the time. There can be no doubt that all the signs were in hand; perhaps ear...

Scene VII

Cardano's house in Milan, c. 1539. CARDANO is sleeping beneath a crucifix. MELENCOLIA is kneeling above him. She calls up the sun. CARDANO abruptly awakes and glances around wildly.

CAR: Lucia! Last night I prayed for a dream to guide me in my treatment of Count Borromeo's son. A huge snake eyed me hungrily from the ground.
(Abruptly): That's it! It is one of the serpents on the Borromeo coat of arms! If I treat the child harshly, I am doomed!
(He rises, bites his arm and puts on a cloak.)

CAR1: I might have thought better about going.

CAR: This dream has saved me from certain death. The boy's malady is worms. I'll change the prescription from a coarse vermicide to one with shavings of gems and bone of unicorn, as befits his station.

(Exit CARDANO. MEL follows a comet in the sky, then ushers in CARDANO, gasping for breath, sword drawn.)

CAR (To his left shoulder): What happened?

CAR1: What do you think happened? The apothecary failed to follow my instructions. The boy died and Borromeo drew his dagger. The servants aided my escape.

CAR: Will the Count come after me? (A beat. Offhandedly): No, he'll get over it.

BOR (Offstage): Never, Cardano! I curse you!

CAR: Life is a little stormy at the moment. Those shitters of wisdom at College of Physicians *are not* happy. They've rejected me again. I only pointed out seventy-two errors in their practices—no wine to the sick, really. The Borromeo affair won't help. How am I to practice in Milano? I've been offered a professorship of mathematics in Pavia. But they'll not pay me and I'll not take it. I have, though, cured the Augustinian prior of leprosy, do not doubt it.

(MEL is skeptical.)

Time is my possession!

CAR1: Once more I have had occasion to doubt this.

CAR: My friends will present me to His Holiness. A little Fortune and I'll become the Pope's personal physician.

Only two nights ago I dreamt of a starry sky with Mercury first absent, then taking his proper place. What else but me among the constellation of physicians! Milanese College of Dodos, take that! Hoist the white flag now!

God, what is this discharge of urine that afflicts me? Sixty to one hundred ounces in a day!

(MEL indicates he should drink less, then with a chart she illustrates the four humors and the connection between the planets and certain organs.)

CAR: Otherwise, I am in good health, thank you.

(Catching sight of his children, offstage): Giambattista, you'll be just like your father—except for that slight hunch on your back. I foresee it with the certainty of sunrise. This house does seem a little rickety. Chiara, you will be as beautiful as your mother; I bet my entire fortune on it. (Toward left shoulder): What, you advise lowering the stakes?

(Dismissing voice): Aah, time for a new *Prognostico*. A tip to my readers:

If you don't administer medicines under the proper planetary aspects, it is as useless as treating illnesses of a moist nature with dry remedies.

Hmm, I'd definitely profit by casting the horoscope of the Pontiff.

Cicero, Octavian, Caesar, Caligula,

Roman Emperors, vox populi sure is diggin' ya.

My decision; I'll cast your genitures with signature precision.

The cash'll come blowin', jes' like time's a-flowin'.

I'll live off fortunes, through life now rowin'.

Horoscopes of the famous, my name's just glowin'.

I like it.

CAR1: I once cast the nativity of Albrecht Dürer, that excellent artist. Venus, the sun and the moon were in the constellation of six magnificent stars, four in Orion and two in Auriga. He deserved nothing less than the most luminous place in the sky. But whether the great power of these stars combined with that of the planets exerts a greater influence on painting or on other artistic pursuits still needs to be investigated. The numbers in his magic square all add to thirty-four. Hmm, that's the product of two primes and the tenth number in the Fibonacci sequence. Aha, the secret of the universe...!

Scene VIII

Enter FERRARI, staggering, bloodied, holding a bloody hand.

CAR: *Dio mio*, Ludovico, what's happened to you?! You're missing two fingers!

FER: My opponent is missing three.

(CARDANO sits him down and begins to bandage him.)

FER (In pain): It is nothing—

CAR: Nothing!

FER: I shall have to abandon my ambitions on the lute. Messer, I bear more important news. Have you heard? Nicolò Tartalea has solved the *cosa* and the cube equal to a number!

CAR (Forgetting the wound. With a certain wonder): *Pote de Cristo!* Then it is possible! The solution does not lie beyond the powers of human reason...! Ludovico, come, we must wrest this secret from him for our great work on algebra! I'll write to Tartalea at once. Take a letter!

FER (Using his teeth to finish tying himself, failing to pick up a quill): Don't waste a drop of ink on that scoundrel, Messer. Nicolò is sweeping up in disputes all over Venezia. He knows the worth of his secret and will never reveal it.

CAR: We shall see.

(CARDANO takes quill and begins writing. The stage is cleared of all furniture except for Cardano's desk and another, on the opposite side. Enter TARTALEA. MEL takes a letter from CAR and carries it to TAR. As TAR reads it, CAR recites the contents.)

CAR: I beg *Eccellenza* to be good enough to send me the rule you have found in your celebrated contest with Antonio Fior. If it suits you, I propose to publish it under your name in my forthcoming work, the *Ars Magna*. If you do not see fit that it be published, I shall keep it secret.

(TAR pens a reply, which MEL delivers to CAR.)

TAR: *Eccellenza* must pardon me. I prefer to publish it in my own work, not in the work of others.

CAR: (As MEL delivers letter): In that case, would *Eccellenza* at least give me the thirty problems Fior proposed to you and your solutions?

TAR (Handing reply to MEL): This I obviously cannot do, for *Eccellenza* would immediately understand the rule I have discovered, as well as many others which can be derived from it.

CAR (To FER): He does not believe in the dissemination of knowledge.

FER: *Ca pure le pulece hanno la tosse!* I told you, the ass is in it for the purse. I'll see him drawn and quartered, flea'd and curried!

CAR (Handing another letter to MEL): Perhaps Nicolò would consent to answer these few problems so that I might check his results against mine.

TAR: (Reading letter and laughing): Does he take me for a fool? He wants me to believe he can solve these problems, but if he knew the solution, why would he come begging? ⁴ I'll send him Fior's list, no more.

(MEL delivers it. By this time, she is becoming exhausted.)

CAR (Handing another letter to MEL): This is of no help, *Eccellenza!* These thirty questions are really but one! It grieves me deeply that among the many other difficulties of our science, we should also have to contend with the presumption and discourtesy of those who work in it. It is no surprise that laymen reckon us as being next to insane.

(MEL attempts to warn him against sending the letter, but CAR ignores her and she reluctantly delivers it.)

CAR: I am writing amiably to you to dissolve your fantasy that you are great, and to let you know that in the realm of knowledge you are nearer to the bottom of the valley than the mountain's summit. You say my questions all reduce to Fior's problem. You are laughable. Do you really think you can dismiss me like a child with a wave of your hand? The presumption

⁴ Alt. (This and the following two footnotes give the more historically accurate versions): He wants me to believe he can solve these problems, but they are clearly from my friend Zuanne de Coi. If Cardano knew the solution, why would he come begging?

is grave.⁵

I propose a public dispute in Venezia or Milano. If I were cunning, I'd even wager one hundred *scudi* that these problems are not at all the same. Why don't you solve these two trifling exercises I send and you will see what I mean.

TAR (Laughing): I see the gambler wants to play *trappola* with me. Does *Eccellenza* believe me so easily snared? I accept your offer of a dispute, but I will not solve the two problems for you until we meet in combat.

CAR: Hmm, let me say that I have read your recent book, *The New Science of Artillery*. It contains many grave errors, contrary to reason and experience. Your fifth proposition concerning natural and violent motions is preposterous.⁶ Do you not understand that an object, while descending, moves faster and faster to the earth, but moves forward more and more slowly? From your reasoning you draw many extraordinary and peculiar consequences, but clear-thinking men cannot be so easily deceived.

Forgive me for correcting you; I know artillery is not your specialty.

⁵ Alt. : You say my questions are from Zuanne de Coi and that they all reduce to Fior's problem. Do you truly believe Messer de Coi is the only person in Milano to understand these matters? Your presumption is grave. I knew them before de Coi could count on his ten fingers—if he is really as young as he claims to be.

⁶ Alt: Your fifth proposition stating that no uniformly heavy body can go through any interval of time or space with mixed natural and violent motions, is completely unsupportable.

Why don't you give me your solution to the following: Two men go into business together and have an unknown capital. Their gain is equal to the cube of the tenth part of their capital...

TAR: *Eccellenza* would do better to fire his arrogant and injurious words at men who are too feeble to riposte. He should also rather criticize the first principles from which I concluded my fifth proposition. In believing that you can miraculously demonstrate by your ridiculous opposition that I am wrong, you have only demonstrated, I will not say that you are a great ignoramus, but only a person of poor judgment.

Eccellenza has also remarked that artillery is not my specialty. While aiming cannon is hardly an honorable matter, it is a new world. I take delight in new inventions and treating things which others have not discussed. I have brought forth two kinds of instruments useful in this art, for measuring angles and distances, and I shall send them to you.

(Illustrations of Tartalea's devices may be projected. MEL may demonstrate the square and the quadrant.)

CAR: My dear Messer Nicolò, I have received your reply, which pleased me more the further I read. I am not moved by envy to decide whether you are my equal or inferior; if you surpass me, I should try to soar to your heights. If I wrote sharply, it was only to produce exactly what has taken

place: to have received the friendship of a man who is so singularly skilled in the mathematical art.

Now, I have informed Signore the Marchese about your new devices and he requests you hurry to Milano as soon as possible. He rewards men of genius handsomely and you will not be dissatisfied.

While you are in Milano, do me the honor of staying at my house so we can discuss mathematical questions face to face. *Cristo vi protegga.*

TAR: The wretch is trying to snare me. It smells more than the canals of Venezia. What can I do? If I do not go to Milano, Signore the Marchese will be offended and I'll lose my advantage.

(MEL guides TARTALEA across the stage to CARDANO, who greets him with a bow and offers him a glass of wine. At her behest, FERRARI also greets him, grudgingly.)

CAR: You honor me with your presence, Nicolò, but you have been unkind in not giving me the rule for the *cosa* and cube, even after my greatest entreaties.

TAR: The solution itself is of less account than all the things one may discover with it, for it is a key that opens the door to investigate boundless other cases. That is the first reason for my reluctance. The second is that I have been translating Euclid into Italian—

CAR: Italian! Then this will be the first time the master has been published in

any modern language!

TAR: True.

CAR: An event of the greatest importance! I toast you, Master Nicolò!

TAR: The third reason is that, as I wrote, I wish to include the discovery and its consequences in my own book, not in yours.

CAR: But I have offered not to publish the secret if you do not wish it.

TAR: I do not believe you. Let us leave it at that.

(MEL guides CARDANO to a Bible.)

CAR: I swear to you, by God's Holy Gospels, and as a true man of honor, that if you teach them to me, I shall never publish your discoveries. And I pledge on my faith as a true Christian to write them down in code, so that after my death, no one will be able to decipher them.

(He kisses the Bible. And a cross, for good measure. MEL detaches a boiled bat from her dress and offers it to him. He does not see it.)

CAR: Now will you believe me?

TAR: If I did not accept such oaths, I would be judged faithless. Very well, I'll teach you the secret in a poem I use to remember it:

When the cube and the thing are equal to a number,

CAR: When the cube and the *cosa* are equal to a number,

($x^3 + ax = b$ is projected. MEL, with a pointer, and FER act the role of back-up dancers.)

TAR: The solution is no tougher than what you'll now remember.

CAR: The solution is no tougher than what I'll now remember.

(TARTALEA and CARDANO dance together.)

CAR & TAR: Find a second number and then a third,

So that their difference is just the first.⁷

($u - v = b$ is projected.)

Keep this in mind as always preferred,

But that's not the only condition you'll need conferred.

Be sure their product is the cube of the third.

($uv = (a/3)^3$ is projected.)

CAR: The cube of the third?

TAR: The cube of the third of the original thing.

The remainder then, of their cube roots subtracted,

Will be the *cosa* you want extracted.

($x = \sqrt[3]{u} - \sqrt[3]{v}$ is projected.)

CAR: That's it?

TAR: *Si, certo.*

CAR: Wonderful! A good verse is always the best way to remember a

⁷ Alt. (much less authentic): Find a second number, u , and a third v ,
So that their difference $u-v$
Does no more than equal b .

mathematical formula. I understand it completely! I feel as if I've eaten a
boiled bat, so free are my spirits from melancholy.

TAR: Be loath to forget your oath as well, *Eccellenza*.

Should you ever publish these secrets,

Remembering me as you will their true architect,

I swear you shall live, and die, with regret.

CAR: Have no fear, Brother Nicolò. I have sworn on the Holy Gospel never to
reveal your secret. May I freeze in the Ninth Circle of Hell if I speak not
the truth.

(They drink a toast and embrace. MEL looks on skeptically. FER looks on with
disgust.)

End Act I

Act II

Interscene

CAR1: Tartalea was right when he said that no one knows everything; nay, the most ignorant do not realize that they lack even the beginnings of understanding. For me, to understand and grasp the meaning of all the world's wonders would be more precious than the everlasting dominion of the entire universe; and this I swear by all that is holy. Nicolò never could see the big picture.

Scene I

Cardano's new house in Milan, c. 1545. The furnishings have noticeably improved over the old one. CARDANO and his eldest son, GIAMBATTISTA, are sitting at a table, eating and playing chess. Enter Cardano's daughter CHIARA, having just woken. MELENCOLIA is perched upstage. CARDANO and GIAMBATTISTA continue playing during the dialogue.

CHIARA (Genuflecting before the crucifix): I'm sorry I slept so late, Father!

CAR: Nine hours! (Aside): Of course, I usually spend ten hours in bed, eight sleeping. Chiara, have you become phlegmatic or melancholic?

(MEL yawns in aggravation.)

CHIARA (Somewhat puzzled): Do you mean unhappy? Papa, I had the most vivid dream! Three lady angels took me out of bed and led me through a forest into a meadow filled with artichokes.

CAR: Ah, but this is propitious, my darling. The three angels were the three female virtues: justice, rectitude and reason. The forest is danger and the field of artichokes portends a favor from an unknown person.

(MEL, munching on an artichoke, goes into an erotic fervor, illustrating its aphrodisiacal property and consequences to a woman's reputation. She walks to the chessboard and begins advising GIAMBATTISTA, who apparently doesn't hear her. She approves of his move.)

CHIARA: Where do dreams come from, Father?

CAR: That's a bad move, Giambattista. I'd clean you out if we were playing for money. *A soldo per pawn?*

(GIAM takes back his move. MEL expresses puzzlement, disagreement.)

All things in the universe are linked, Chiara. When we dream, we walk a path toward God.

CHIARA: Does God let us touch Him?

(GIAM makes a new move. MEL disapproves.)

CAR: That's better. From time to time, God does send us divine beings, who clear the path for a union with Him.

CHIARA: Are those spirits good or bad?

(MEL glances at her reproachfully, but concentrates on the chessboard.)

CAR: If they allow us reach God, they are good. Other demons choke humans, or if they can't do that, drive them to despair. But beware interpreting dreams directly. Your bishop is in a bad position. Note for future memoir: There are sixty-three basic rules for interpreting dreams.

CAR1: As I wrote in my *Synesiorum somniorum libri*, book I.

CHIARA: What do you mean, Papa?

(MEL shrugs in perplexity. She continues advising GIAM, sometimes successfully, sometimes not, eventually giving up.)

CAR: Once your grandfather came to me in a dream.

It seemed that my naked soul was in the Heaven of the Moon, liberated and solitary, when he said, "God has appointed me your guardian. All these spaces are filled with spirits, but you will never see them, even as it is unlawful for you to address them. You will pass through the seven Heavens in seven thousand years, and after eight you will enter the Kingdom of God."

GIAM: (Making a move): And what does that mean, father?

CAR: The soul of my father is my tutelary spirit.

The first thousand years was in the Heaven of the Moon, which signified

grammar; the next thousand, the Heaven of Mercury—geometry and arithmetic; Venus music, Mars medicine. The eighth orb stood for the final harvest of understanding, for natural science and all studies. And after these I will rest serenely with my Prince, the Lord.

GIAM: Eight thousand years to set eyes on God? That's too long to wait.

CAR: God rewards the patient. Of course, with the new theory of Copernicus, I am uncertain about the seven heavens. Most likely he is mistaken. What were your dreams last night, son?

(GIAM shakes his head.)

Come.

GIAM: I was under water, swimming. A woman, shrouded in white, came and pulled me to land. She said something to me that I couldn't hear, handed me some gems and then walked away from me on the sand.

CAR: You were swimming because your webbed toes have made you kin to fish. The woman was your mother. You couldn't hear her because you are deaf in your right ear. The gems she left you were books, priceless for your studies. She walked away because she has departed from us.

GIAM: You don't mourn her much, do you?

(CAR rises, but is unable to answer.)

GIAM: Then I looked into the water and saw myself with three eyes.

CAR (Sitting again): Good. That means you are clever. You will surpass me as a physician! I see this more clearly than I see you sitting before me.

GIAM: Then I saw my stomach lying outside my body, full of food, and my fingers cut off.

(CARDANO shudders, makes no reply. MEL picks up the saw in the Dürer etching and begins cutting a plank.)

GIAM: Well, I am off. Check.

CAR: Wither?

GIAM: About.

CAR: The brothels? Stay clear. (Makes a move.) The *morbo gallico* is the most virulent pox.

GIAM: The Spanish scabies?

CAR: You have studying to do!

GIAM: Later! Mate.

(Exit GIAMBATTISTA. Enter FERRARI with his sister MADDALENA.)

CAR: Welcome, Ludovico!

FER: Allow me, *Emeritus*, to present my sister, Maddalena, dearest to me above all others.

(MAD curtsies. CAR kisses her hand.)

MAD: What a splendid house, Messer!

CAR: It is an improvement over the old one, which collapsed.

CAR1: I foresaw it when my bed burst into flames, twice.

(MEL reacts skeptically and tries to illustrate a shoddily constructed house.)

MAD (Clasping her brother's arm): I am so honored, *Dottore* Cardano. My brother speaks incessantly of you, how you taught him Greek, Latin, mathematics—

CAR: I say he has surpassed me, nearly. Over the long years—

FER: He has been gambling—

CAR: Diagnosing. Prognosticating. We have solved the *cosa* and cube equal to a number; the square and a number equal to the *cosa*; the cube, the *cosa* and a number equal to the square...

FER: He means all the cubes.

MAD: Every one?

CAR: That is synonymous. Ludovico himself has solved the troublesome quartic.

($ax^4+bx^3+cx^2+e = dx$ is projected.)

FER (“Modestly”): Once the solution to the *cosa* and cube came into our hands, it was not so difficult.

CAR: The equation of the fifth degree is resisting our attack. Strangely obstinate, that equation.

FER: It cannot hold out for long, I sense it.

(MEL smiles like the Mona Lisa.)

CAR: I'll ask God to send me the solution in a dream.

FER: Ask and thou shalt receive? No. He who hath, gets. That is God's rule;
that's the Church's rule.

CAR (Recoiling, sharply): Ludovico!

MAD (Grasping her brother's arm again): But Messer, my brother needn't have
said a word. Your name as a physician and astrologer is renown—

FER: —throughout Europe.

CAR: Fortune's wheel has not ceased to wheel since the world's creation.

The College of Physicians some time ago capitulated.

Hah! Time is my possession!

I foresaw it all, you'll undoubtedly recall.

(Abruptly, to left shoulder): Yes, *grazie*.

Bastard, humph. They had no choice. Magistrates, rivals, envy, I
permitted no one, nothing, to stand in my way.

There is the question of my own ignorance. I admit to no qualifications
for living artfully. My astrology said I would never see forty, forty-five at
the outside.

CAR1 (Puzzled): Strange, that prediction...

CAR: When you get down to it, there's no place for Fortuna in art. Does a barber place his faith in Fortune when he shaves a customer? Does a physician place his faith in chance?

(OTHERS react to this in the affirmative.)

(After a beat): Cardinal Morone has prompted Pope Paul
to hand me the post of Vatican physician.

But I say Paul is a crumbling wall.

Why should I sit in bondage

OTHERS: Why should he sit in bondage?

CAR: to a Pontiff in his dotage,
Risking it all in flame and grillage?

OTHERS: Of course Italy may be pillaged, again.

CAR: Not any less than the king of the Danes,
Through my friend, Andreas Vesalius,
Author of the famous Fabricus,

OTHERS: Author of the *most* famous Fabricus,

CAR: Has offered me prime position at the Court.
There's no side down, eight hundred crowns;
I've declined. The northern clime, I can't abide,

OTHERS: It is moderated by the seaside.

CAR: To their faith, I'm not inclined,
It being antithetical,

FER: theoretical,

MAD: not to say heretical.

CAR: I'm in no mind to be maligned, twined, burned alive.

(To MAD): I do say with certainty that I've never lost a patient to fever
and only three to circumstances beyond my control.

MAD: There is your success!

CAR: Success has come to your brother, too, and beyond dreams. At such a
tender age—

MAD: —a renowned lecturer!

CAR: Locally. (To FER): If that tongue of yours doesn't lead you straight into
the clutches of the Inquisition, you shall climb to the summit—I foresee
it—and eclipse that dolt Tartalea who refuses to publish.

(MAD kisses her brother, soundly.)

FER: *A proposito—*

CAR: Yes?

FER: I have received a letter from Annibale della Nave, son-in-law of Scipione
del Ferro—

CAR: Scipio, the old geometer from Bologna? Isn't he long dead?

FER: Decades. Annibale says he is in possession of Scipio's unpublished works.
In one notebook he finds the solution to the *cosa* and the cube equal to a number!

CAR: Tartalea wasn't first?

(MEL shrugs, "Who cares?")

FER: Scipio beat him by twenty years. That's not all. On his deathbed he revealed the secret to a student—one Antonio Maria Fior.

CAR: This explains everything! Fior was too much a twerp to have ever made such a discovery! del Ferro swore Fior to silence?

FER: Precisely.

CAR: We must to Bologna to examine this notebook. At once!

(CAR dons a cloak.)

FER: There is one thing I don't understand.

CAR: Only?

FER: In our work, we sometimes encounter square roots of negative numbers.

CAR: And when we multiply them as ordinary numbers we nevertheless get correct answers.

FER: But what can square roots of negative numbers possibly mean? It tortures the mind.

CAR: Mathematical subtlety is greater than ours. So subtle as to be useless.

Such numbers must be figments of the imagination.⁸

(Exeunt.)

Scene II

Venice. Enter MELENCOLIA, leading TARTALEA past a bookseller's stall. At a gesture, one of the books is lit up by a halo. He stops.

BOOK: (Whispering): Snatch me up now, Signore, we're selling like lasagna.

(TARTALEA picks up the book and reads aloud.)

TAR: "*The Great Art* by Girolamo Cardano, Outstanding Mathematician, Philosopher and Physician....In this book, learned reader, you hold the rules of algebra. It is so replete with new discoveries and demonstrations by the author—more than seventy, can you believe it?—that its forerunners are of little account or, in the vernacular, they are completely washed out."⁹

(Paging through the book with increasing agitation. Then screaming):

N—n—no! (Recovering slightly): "Scipio Ferro of Bologna well-nigh thirty years ago discovered the rule for the *cosa* and the cube equal to a number.

This accomplishment, surpassing all human subtlety and mortal

⁸ Alt.: Such numbers must be imaginary.

⁹ Alt.: annihilated.

ingenuity, was truly a celestial gift and proof of the virtue of the soul, sufficient to convince anyone that there is nothing the human mind cannot comprehend. Scipio handed his beautiful and sublime discovery to Antonio Maria Fior of Venice, whose contest with Nicolò Tartalea of Brescia gave Nicolò the occasion to rediscover it..."

Scipio Ferro! Fior's teacher? That is how the *idiota* Fior could solve...!

Cardano! By the cunt of Christ! He has violated his sacred vow! He will burn in Hell for this, I swear!

(He finds a Bible on the cart. Then, screaming in agony): I—I—a —aaaah!

(BOOKSELLER runs away. Exeunt.)

Interscene

CAR1: Note for present memoir: What did I care? Seventy-three illustrious men have praised me in their works and only twelve have attacked me—and those merely to make a reputation for themselves. Tartalea was among them. He didn't understand that of all the arts, one art is master: that fundamental precision by which we may explain the greatest mysteries using the fewest general principles, principles that harmonize without contradicting each other. Hmm, now that I think of it, one might say mathematics. Nicolò also failed to expeditiously implement the brass

rule: do unto others before they do it unto you.

Scene III

Cardano's house. CHIARA is present, reading or embroidering. Enter CARDANO with MELENCOLIA behind him. (Note: If a young ALDO is available, the alternate opening to this scene in Appendix A can be used.)

CHIARA: What is wrong, Father?

CAR1: Neither did Nicolò understand that all things human are transitory and no more than a moment's breath. Even our happiness is like effervescent water. There is no panacea; the troubles of the soul are altogether incurable.

CAR: Your brother Aldo is spending the night in jail.

CHIARA: Why?

CAR: Thievery, purse snatching. What temperament has inspired that child? At such an age he is already a worthless miscreant, dragging my priceless reputation through the gutter!

CHIARA: Father, forgive him. He doesn't know what he is doing. It must be the other boys.

(MEL acts out the part of an incubus preying on a helpless boy, etc.)

CAR: I pray you are right. I see growing in him an incubus, sent to destroy us, offspring of that cursèd union with your mother! A Beelzebub, reveling in dung! He refuses to study; he roams the streets all day aiming only at wallets; he dreams of becoming a torturer—he will sooner end up on the rack than turning it!

CHIARA: Stop it, Father, stop!

(She rushes to embrace him.)

CAR: How is it possible that such an issue can be my son? Giambattista, at least, will become a physician...(Sighing): Future generations will look at such woes and laugh, for what is this mortal life other than inanity, emptiness and dream-shadows?

We move insubstantially in the long darkness,

Once taking a timid step into the light,

To be quickly dispersed by the harsh glare of woe and strife

turned on us by our fellows.

And are thus sent back into the great emptiness forever,

beyond reach.

(Embracing his daughter): Chiara, beloved. Promise me, never to travel the path of your brother.

CHIARA: Of course, Father. I promise.

CAR: Guide him. Show him that he must observe time.

CHIARA: I'll try, Father.

(A knock. CHIARA answers the door. Enter FERRARI and MADDALENA.)

CHIARA: Father is in a bad humor, Messer Ferrari.

FER: What ails him?

CAR: My younger son is turning into a wrongdoer, a reprobate, despite my best efforts. I do not understand...

FER: Allow me to cheer you, *Emeritus*: The *Ars Magna* is being read by every scholar in Europe!

CAR: I have heard. (Brightening): To be sure, that is cheering. My immortality is ensured—

MAD: —if it hasn't been already.

CAR: Precisely.

FER: One scholar in particular has read it carefully.

(Handing CARDANO a book): Tartalea's reply.

CAR (Reading): *Various Questions and Inventions*.

FER: Everything is there. Your letters. Your oath.

CAR (Perusing book): Nicolò must have had his papers in exemplary order...

I swore that I would never reveal *his* discovery, not Scipione del Ferro's. I

gave him due credit, some credit. What is his problem?

FER: He has the infamy to call you ignorant of mathematics, uncultured and simpleminded, a violator of vows—

(MEL holds up a poster reading, "Sixteenth Century: Go Machiavelli! Go Borgias!")

FER: —a man of low birth.

CAR: There is that.

MAD: It is slander most ill-famed, Messer. You cannot stand for it. He intends to ruin your reputation—

FER: He may succeed. Ignorant in mathematics! Bloated sack of snake pus...! Challenge him to a contest, *Emeritus*, at once, immediately, this moment! Time, this time, is not in your possession.

CAR: Ludovico, I am no longer the starving doctor I was when you first arrived in my house over a decade ago. Kings, queens, cardinals and popes solicit my counsel. My works are read, indeed, across Europe. I am the most famous mathematician in the world. It would be unseemly to enter into a contest with...*Tartalea*.

FER: It will be fatal to be branded a thief and a liar!

CAR: (Aside): It would be equally fatal to lose.

I am a physician. I have cured sixty-seven people others have given up for lost. I cannot enter into this dispute.

MAD (Putting her arm around her brother): Let Ludovico champion you!

(They all pause to consider.)

FER: This is not a bad idea.

CAR: No, it isn't. You have the disposition of a viper, Ludovico. Just what we require.

MAD: And, brother, if you triumph—renown!

(MEL impotently warns against this course.)

FER: I prefer the riches.

MAD (Squeezing him tighter): There is nothing you could not accomplish!

FER: I'll post *cartelli* at once!

(Exeunt FER and MAD. Enter GIAMBATTISTA.)

CAR: Where have you been? No, I see it. Running after some worthless whore.

GIAM: I love her.

(MEL mimics "how sweet.")

CAR (Aside): This has been a bad day. I should have paid more attention to the cock with a human voice that addressed me last night.

(Laughing sarcastically, to GIAM): Who?

GIAM: Brandonia di Seroni.

CAR: Sit.

(They sit at the table and begin pondering an unfinished chess game.)

Everyone but you, apparently, knows the reputation of Brandonia di Seroni and her worthless family. I'd prefer to see you at the brothels.

GIAM: Don't worry.

CAR: Don't worry what?

(GIAM makes a move. MEL, once again, attempts to coach, but is distracted by the conversation and reacts to it.)

CAR: That *puttana* will bring you nothing but ruin!

(Makes a move.)

GIAM: I have no intention of marrying anyone until I become doctor of medicine.

CAR: At least you show a thimbleful of sense.

GIAM: Check.

CHIARA: What sort of *cartelli* was Messer Ferrari speaking about, Father?

CAR: (Distractedly): Not signs from Heaven, child.

(Lights down.)

Interscene

CAR1: "I reflected that no small blame is attached to that man who, either through science, his own industry or Fortuna, discovers some noteworthy thing but wants to be its sole possessor; for, if all our ancients had done the same, we should now be little different from the animals. In order not

to incur that censure, I have decided to publish these questions and inventions of mine.”

Can you believe Nicolò wrote that in his *Various Questions and Inventions*?

Hypocrite! He only kept his greatest discovery secret for ten years!

Obviously, the publication of my *Ars Magna* wrung this deceit from

Tartaglia, but it was too late for him.

Scene IV

TARTALEA and FERRARI are positioned on opposite sides of the stage.

Between them are chairs and a bed, signifying Cardano’s house or another. CARDANO stands with FERRARI. MEL is not a letter carrier, but reacts throughout the entire scene.

FER: Messer Nicolò Tartalea, there has come into my hands your book *Various Questions and Inventions*. You have the infamy to call the excellent Signore Girolamo Cardano ignorant of mathematics, simple minded, a man of low standing and coarse manners. With these lies you hope to dupe the ignorant.

(TAR is muttering.)

FER: You know full well that Signore Cardano is universally acclaimed to be proficient not only in his profession, medicine, but in mathematics, which he often uses as a game for relaxation and solace. In this he has been so successful that, speaking with only moderate modesty, everyone from butchers to kings knows him to be one of the world's foremost mathematicians.

TAR: Butchers and kings—precisely those who recognize a mathematician when they see one.

FER: Because his station prevents *Illustrissimo* Cardano from entering a dispute, I Ludovico Ferrari, his creation, take it upon myself to make publically known your malice and deceit.

TAR (Aside): Ah, Cardano fears to face Nicolò Tartalea—for good reason. He will enter this contest; I swear it.

FER: Among the more than one thousand errors in your book—

TAR (Chuckles): Ludovico, no doubt, has found every one of them.

FER: —I mention one in section eight that you call your own but is really is a result by Giordano.

TAR: Giordano didn't prove it. I did.

FER: This is theft.

TAR (Laughing): Cardano and his creature could teach Dante a *cosa* or two

about theft.

FER: But theft is nothing, a nullity next to your brazen effrontery and impudence in daring to reprove Aristotle on his mechanics.

TAR: Oooh, I dare to dispute Aristotle. Treachery most foul! Damn me to the Ninth!

FER: Sometimes in the same section you repeat things three or four times. This shows bad memory and negligence.

TAR: Emphasis for weak students.

FER: I offer to dispute with you publically on Geometry, Arithmetic, Astrology, Music, Cosmography, Perspective, Architecture , not to mention on everything that the Greek, Latin and Italian authors have ever written since the beginning of time. The contest may be held any place convenient to us both, before qualified judges.

TAR: Done.

FER: I propose to deposit as much money as you wish, up to two hundred *scudi*, so that the winner may acquire not only honor, but honor with advantage. I am sending copies of this letter to fifty-three mathematicians and an infinity of other scholars throughout Italy.

I expect a reply within thirty days of the receipt of this letter. Ludovico Ferrari, Cardano's creation.

(To CAR): That should have him shitting in his pants.

(Enter GIAMBATTISTA and BRANDONIA, running to the center. He embraces and kisses her. She allows him, then pulls away teasingly.)

GIAM: Come back, Brandonia, my beautiful witch. You know I can't get enough of you!

BRAN: It's all gab and gallantry with you men, isn't it?

(She falls back into his arms, lets him kiss her and again frees herself from his embrace.)

GIAM: My blood's aflame. Why are you so stingy with your favors today?

BRAN: The antipasto is meant to sharpen the appetite.

GIAM: Swear you'll marry me.

(MEL attempts to keep them apart, to no avail. Laughing, BRAN kisses GIAM as lights go down on them. Lights up on TAR and FER.)

TAR: Your public *cartello* has been delivered to me, with the fifty-three eminent names attached. If you, Ludovico Ferrari, spawn of Cardano, think to frighten me by such a feeble attack, you are greatly mistaken, for I swear and affirm to you on my Christian faith that nothing in this life has ever delighted me more.

FER: Empty bravado.

CAR: We may hope.

TAR: I do not apologize for my sharp words directed towards *Eccellenza*

Cardano, for I truly do not know a greater infamy than to break an oath, and this holds not only in our own religion, but in all others.

FER: Greater infamy *not* to break an oath to a swine who refuses to make his knowledge public!

TAR: I have many accounts to settle with *Eccellenza*, not least because he has privately written to me that I am an ignoramus. If he has provoked you, Ludovico Ferrari, his creature, to defend his honor, tell him in no uncertain terms that he must defend it himself.

CAR: I am occupied by public lectures in Pavia.

FER: He is occupied by public lectures in Pavia.

TAR: Weak excuses that he is engaged in public lectures hardly suffice. I do not intend to let you escape this ball you have begun so impudently. I am prepared to lock all the doors so that neither Cardano nor his offspring leaves the dance.

(MEL takes a turn with TAR.)

Make certain *Eccellenza* signs the *cartello* with his own hand, and with overflowing heart I shall gladly dispute both of you on all the fields you mentioned.

FER (To CAR): Nicolò intends to dispute you, not me.

CAR: I am busy.

FER: He names you a coward.

CAR: Ludovico, I can have nothing to do with this.

(Lights down on FER and CAR. Up on GIAM and BRAN.)

GIAM: Swear you'll marry me.

BRAN: Why swear? Your excellent father won't permit it. I have no dowry.

GIAM: That's of no account.

(BRAN laughs derisively.)

GIAM: He'll come round.

BRAN: He may; you won't.

GIAM: Your meaning, my sweet?

BRAN: The diligent student has sworn an oath to finish his studies. Borrrrrring!

GIAM: Only to a *stupido!* My progress is brilliant—

BRAN: —if you do say so yourself, or your father.

GIAM: I don't lose money gambling, too much. I'm the best in my class. In a few years I'll have my degree. Wait.

BRAN: I see no reason to.

GIAM: I love you.

BRAN: I love you, too. So what?

GIAM: We'll be faithful to each other.

BRAN (Laughing): I declare my love and you expect fidelity? Please, I'm not

Saint Petronilla.

GIAM: You are harsh.

BRAN (Cuddling up to him): My parents agree I should marry you.

GIAM: I am hardly so blind as to not perceive the reason. The Seronis can expect nothing from my father, not a single *zecchino*.

BRAN: Is he so stingy?

GIAM: Hardly. You said yourself he doesn't approve.

BRAN: You said he'd come round. Hmmm?

(She embraces him tightly. Lights down on GIAM and BRAN. Lights up on FER and TAR.)

FER: My challenge to you was issued in my name alone, you will answer me and not Messer Cardano. I propose thirty-one problems on the topics I have already listed, as well as on your own work.

TAR: *Eccellenza* Cardano and his creature Ferrari, I accept the proposal of thirty-one problems, but the condition of yours that we debate my own work makes me laugh. You are artfully proposing to debate your creator's book. Do you think me such an idiot as not to have noticed? In this you reveal your own stupidity. If he proposes to debate, let him do it in the open.

I'll reveal the amount of money I intend to deposit and the problems to be

disputed after the arrival of your reply, which I expect within thirty days.

Once I have your answer, I honestly expect to soak the heads of both of you in one fell swoop, something which no barber in all Italy can do.

FER: By the way, if you are astonished whether it is by a revelation of Apollo that I have heard all your lies, let me remind you that I was present when Cardano offered you hospitality and obtained your tiny discovery. He then revived this languishing little plant from near death by transplanting it into his book, where it was given the greatest and most fertile place to grow.

TAR: He himself confessed that my invention is the soul of his book. There is almost nothing else original in it, since everything follows effortlessly from the vigor of my little plant.

FER: He proclaimed you as the inventor. What more do you want? "I don't want it divulged," you say. Why? "So that no one else shall profit from my invention."

TAR: I never said that.

FER: You show yourself to be un-Christian and malicious, worthy of being utterly banned from human society. After all, although your invention was of almost no consequence, you refused to divulge it. We are not born for ourselves only, but for the benefit of our native land and the whole

human race, and when you possess something good, why don't you share it with others? "I will publish it, but in my own book," you say. We waited ten years.

TAR (Sullenly): I was translating Euclid.

(Enter MAD and CHIARA.)

MAD: Brother, you have been firing *cartelli* for two years! Why haven't you finished him off?

FER (Ignoring her, to TAR): I well know that the only reason you have replied to my last *cartello* is that you have been offered a lectureship in your hometown of Brescia—on the condition that you engage with me in a public dispute.

CHIARA: Father, make them stop!

(CAR laughs. MEL tries, to no avail. During the following exchange, she gradually goes crazy.)

TAR (Aside): It is true that noble Brescians, for great promises and a meager return, require me to dispute on Euclid.

MAD: Ludovico, the death blow! Strike now!

FER (To TAR): You are the devil of a man, claiming to be an inventor, when you really only have the head of an adder, which can understand nothing, everything going in one ear and out the other.

MAD: Harder!

FER: I say this not to mock you but to praise you, because you are capable of wriggling like an eel and escaping the strongest grip. I call you an empty bag of lies. I call you a bag of lies so that you may dispense with letters and attack me by force of arms.

TAR: I am pleased to save you the inconvenience of traveling to Venezia or Bologna. I shall travel to Milano and meet you on your chosen field of battle.

MAD: Brother, slay him!

VOICE: Thief versus Adder! Battle of the titans! Reserve your tickets in advance!

FER: Find me six quantities in continuous proportion starting with one, such that the double of the second with the triple of the third is equal to the root of the sixth.

(On the supertitle is displayed: *Find the sequence $1, r, r^2 \dots r^5$ such that $2r + 3r^2 = \sqrt{r^5}$.*

MEL attempts to elucidate but is immediately distracted by next question.)

TAR: Divide a triangle into two parts of equal area by one straight line passing through a given point on one of the sides.

(Figure 4 displayed in Appendix B is projected. MEL points to figure but not for long.)

FER: I require an exposition of Plato's *Timaeus*, beginning with *Fuit autem talis illa partitio* until *Postquam igitur secundum creatoris*.

(MEL begins to expostulate, scratches head, halts.)

VOICE: Mathematics, Astrology, Plato! Don Ferrante di Gonzaga, Governor of Milano to preside over final judging at the Church in the Garden of the Frati Zoccolanti! Bribe the nearest Franciscan for an invitation before it's too late!

(Enter two Milanese CITIZENS.)

C1: I'm particularly looking forward to the Plato.

C2: The discussion on perspective sounds more interesting to me. Is there something new since Brunelleschi?

C1: Dürer of course.

(Exeunt.)

CHIARA: Will we be going, Father?

(CAR shrugs.)

TAR: It is shameful to put forth such a problem in public for which you do not have the general solution! My opinion of many of your other exercises is the same but I reserve the right to spit on them in front of the judges.

VOICE: Performance sold out!

(Silence.)

FER: Is unity a number or not?

(MEL halts in puzzlement.)

Interscene

CAR1 (To his left shoulder): No, I wasn't there. Why? As I recall I had to give a lecture in Pavia. Aah, who cares? At the moment it escapes me...

Scene V

August 10, 1548. The Church in the Garden of the Frati Zoccolanti, Milan. The GOVERNOR of Milan presides from a dais in front of the altar. The impression should be given of many assembled nobles and dignitaries. Trumpets sound. Enter FERRARI and TARTALEA from opposite sides. TAR is alone. FER is accompanied by MAD, CHIARA and GIAMBATTISTA. CARDANO is absent. MEL prompts the audience and reacts to everything. The atmosphere from beginning to end should be roiling. If audience poses questions to disputants, the disputants will have to answer.

GOV: Most noble princes, gentlemen and ladies of Milano! We gather here today in the splendid Church of the Wooden-Clogged Franciscan Brethren to judge the most celebrated contest in mathematics since, in all likelihood, the creation of the world!

TAR (Aside): Cardano's creature has surrounded himself by *bravi* and friends,

but the puppet master himself is absent. I have failed to bring him out. The doctor fears to dispute me! No, he regards me beneath his lofty station. I should laugh. They intend to corner this lonely beast. I am a beast, true, rarely cornered, never cowed. Ferrari—he has entertained me for the past year, but here all amusements shall end and I'll reclaim my position in my native town.

GOV: I, Don Ferrante di Gonzaga, Governor of Milano, along with every learned person in Italy, has followed this dispute for—I've forgotten how many years now. Let me then, without further ado, introduce the disputants. On my left, Ludovico Ferrari, at a young age already an esteemed lecturer at the Piatti Foundation and known to be as merciful, on the whole, as Atilla the Hun, who once laid waste this city.

(MEL parades "applause" sign before the audience.)

On my right, the distinguished mathematician from Brescia and Venezia, Nicolò Tartalea, who has of late been applying his talents to save us from the Turks, but given the sorry state of affairs since Prevesa, will very likely fail, in which case Italy will cease to exist, if she ever did, rendering the excellence of our age a fading cinder in the world's memory.

(MEL again parades "applause" sign before the audience. Ferrari's faction answers with catcalls.)

It is our duty to render the final verdict: Is the renowned physician, Girolamo Cardano, a bastard or merely a thief? I mean to say, has he legitimately stolen Nicolò Tartalea's work, or merely exploited it? You understand. Does Nicolò, for his part, have a complaint, or has he obstructed the progress of science? We are not, in fact, assembled to pass judgment on such lofty matters, but to decide which of these two can convince us that the other is an idiot. May the last man standing win.

C1: It's rather warm in here.

C2: I do hope they talk about architecture. I've never really understood the golden section.

TAR: *Eccellenza*, let us cancel these proceedings. I have already won this contest. I solved all the problems put to me within two days, but Cardano and his creature exceeded the agreed-upon time limit by seven months. They have defaulted.

(Catcalls from Ferrari faction.)

FER: False! More lies! He did not answer all my questions!

(GOV motions for calm.)

TAR: *Illustrissimo*, this I concede. It was put to me to explain why Ptolemy set the size of the celestial sphere equal to four-thirds that of the earth. Of course I did not answer. The question itself is preposterous and Cardano

and his creature erred not a little in the matter.

(Catcalls from the Ferrari camp.)

Ptolemy never set the diameter of the celestial sphere equal to four-thirds that of Earth. Where did these children get such a mistaken idea? What is more, if Copernicus...

MAD: He is difficult to listen to, with that stutter.

(She eggs her brother on. He momentarily resists. The catcalls become loud enough that TAR cannot continue. He changes topics.)

TAR: I am further required to explain the rules Vitruvius set for deciding the dimensions of an edifice, such that its appearance will be most pleasing to the eye.

Vitruvius, father of architecture, understood that geometry girds the universe. He teaches that no temple is pleasing without symmetry and proportion, that is, like a well-shaped man, who can fit in a square and circle, the perfect forms of the cosmos, with, ah, sufficient compression.

(A picture of da Vinci's Vitruvian Man is projected. MEL mimics the pose.)

C2: You see, they are disputing architecture.

TAR: (Aside): Why are we wasting our time talking about dead Romans?

Eccellenza, in our own times, Fra Luca has insisted on basing architecture on the divine proportion, why I don't know, but Vitruvius himself says

nothing about the golden section.

C2: Damn, I thought he was going to explain it!

FER: *Hamartia!* Nicolò is stalling. He is so poorly educated in the classics that he cannot answer the question!

TAR (Aside): *Dio mio*, I detest Latin.

Eccellenza, are we to dispute mathematics? I say to you, none of my seventeen questions on geometry were correctly answered.

(GOV shows interest. Attempts to tamp down catcalls. MAD continues to egg her brother on.)

FER: *Eccellenza!* How dare he? Euclid in his third postulate defines a circle as a figure with the property that all straight lines from a given point have equal length. I modified this to say that a circle is the figure produced by a compass of fixed opening drawn around a given point. All proofs and constructions in Euclid follow.

TAR: *Illustrissimo*, I ask again, are we here to dispute mathematics? I am required to explain, according to Plato, how the Demiurge divided the world-soul into harmonic proportions. This is not, *n*—*not* a question for a *m*—modern *m*—mathematician.

(MEL prompts murmurs of assent.)

FAR: If *M*—Messer means by “*m*—mathematician” someone like you who

spends all his days on roots and other trifles, then you are correct. But if you mean by “mathematician” an expert in arithmetic, geometry, astrology and all the other arts that depend on these—as were the ancients and a few of us who emulate them—then you are gravely mistaken. (To MAD): Gravely, correct?

The problem is a mathematical one, one of the finest that could be posed.

TAR: Y—you c—confuse—

C1 (Shouting): You confuse mathematics and philosophy!

TAR: Right.

FER: Anyone who understands the reasoning behind this passage, understands the finest passage in the whole of mathematics and philosophy together. No, *scusate me*, you are right, this is not a subject for you; you are not a mathematician.

(Laughter. MAD applauds.)

TAR (Frustrated): I am not a philosopher! Is unity a number or not? Aristotle, perhaps, scratched his head over such murk. I say, why is unity not a number? It can be added, subtracted and multiplied like any other number, unless you are talking about the Holy Trinity, three in one...And I can hardly believe Cardano’s creature with his constant blasphemy is talking about the Holy Trinity!

(Laughter.)

FER: Blasphemy! What are these terrible words about Aristotle? *Eccellenza*, he should be expelled from this glorious church for uttering such filth.

GOV: It is getting rather hot in here, wouldn't you say?

FER: I say that Nicolò is not even a mathematician in the modern sense. He could not answer my question, "Given a triangle such that its two sides add to twenty, whose base is one more than its height, and that one part of the base is five, find the length of the base."

($y^2 + 25 = x^2$; $y^2 + (y-4)^2 = (20 - x)^2$ with figure 5 from Appendix B is projected.)

TAR (Aside): It is true, I failed to solve this problem. It is an equation of the fourth degree! I did not study Ludovico's methods.

C2 (Shouting): What about the golden section!

FER: Nor could he solve my demand to divide a heptagon with equal sides but unequal angles in half by a straight line!

TAR: (Aside): I have not been able to construct such a thing and I'd bet one hundred *scudi* that Ferrari can't either. There is deception here, but if Ferrari can do it, the pistol does know a few tricks.

C1: They haven't spoken on astrology yet. (To FER): We want astrology!

MAD (To FER): Astrology, don't waste time!

FER: Let me speak rather about the science of astrology...Of course, the

difference between Ptolemy's precepts and what passes for modern astrology is bigger than the difference between emeralds and mud.

Consider the example of Ludovico Sforza, who was ruler of this very city.

(GOV perks up.)

The ignorant court astrologer assigned Sforza a specific time at which he must begin every enterprise, and the prince—in every other respect a man of great wisdom, you understand—foolishly obeyed him. Day in and day out, you could see him leading his entire court through rainstorms and muck, as if in hot pursuit of the enemy. No wonder poor Ludovico ended up in the dungeon, deprived of his domain and thoroughly chastened!

(Laughter. GOV approves.)

TAR: What point of these words without end?

GOV: I could use some wine.

FER: On the other hand, consider my master, Italy's foremost astrologer, who has returned exactitude to the art.

A visitor brought him a certain horoscope.

Eccellenza took one look and said,

"The man is Saturnine and melancholic."

GOV: Let's not get hyperbolic; the moon is up.

FER: The guest said, "How do you come by this conclusion?"

"Saturn over the ascendant rules. Chronos in Leo adds to sorrow.

But the fellow is also capable of smooth and easy speech."

"How do you know?" the visitor asked.

"Draco is ascending," my master replied.

"And Aquarius is a human sign.

But he will certainly die an evil death."

TAR: We all will, if Ferrari doesn't catch his breath.

Illustrissimo, is there nothing you can do to make an end?

GOV (Loudly): Most noble ladies and gentlemen, the worthy adversaries have been on their feet and my ear for eight hours. Let us adjourn for the night and resume in the morn.

C1: I can't wait!

(FER ignores GOV. TAR is shaking his head and muttering angrily. GOV falls asleep on the dais and begins snoring. Lights go down. Stars come up. MEL takes her place in the heavens.)

FER: "He holds Saturn condemned,
With the dragon's tail in the seventh house.
After he's hanged, he'll be burned.
At the age of forty-three."
So precise can be astrology.

(MAD regards him with illuminated face. When the lights finally come up, TAR is absent. The GOV rubs his eyes, yawns, downs a goblet of wine.)

GOV: Where is Nicolò? What, gone!?

(Rising): Hmm, in that case, we declare Ludovico Ferrari the victor! Well done, Ludovico! History will remember you!

(Trumpets are sounded. FER bows. Exeunt.)

End Act II

Act III

Interscene

CAR1: Grunting swine on the street where no swine are to be seen! Quacking ducks in the absence of ducks! A stranger uttering *Tin sin casa* in my room then—vanishing. My clock refusing to move forward, yea, ticking backward. What meaning were these portents, these omens?

Scene I

The road between Brescia and Venezia, c. 1550. Enter MELENCOLIA and TARTALEA, who is carrying a sack of books thrown over his shoulder. MEL sits on a rock, begins fanning herself, checking her feet.

TAR (Not hearing her): Foes give a man strength, purpose, strong feet.
(He puts down the bag and sits next to MEL on a rock.)
These years have worn down my soul and soles.
I lectured—as agreed—but those nobles and noble philosophers in Brescia refused to cough up my fee.
Judas dragged me to Pilate; Pilate to Herod; Herod to Judas...
Their benediction was plain crucifixion. I sued.

(MEL throws him a questioning look, indicates that he might explain.)

TAR For eight months I walked this circular Via Dolorosa. When the music stopped, counsellors proclaimed the agent whose signature affixed the solicitation an innocent lamb. Take up arms against the principal scoundrel, they advised. But he was Brescia's leading procurator and I'd never prevail.

(With extreme bitterness): A year-and-a-half salary, my savings, every *scudo*—gone! Masters of deceit, you forced me to beg alms from private students! A plague broke out...A plague on my homeland, on the city of my birth!

(MEL shakes her head sadly, rises in despair.)

TAR: Each, every patron broke his word and tied his purse. Why? (He spits.)

Cardano's creature from on high refused to allow my riposte.

With the judges arrayed against me, only a mangy dog would have stayed.

Ludovico Ferrari is showered by offers.

The Cardinal of Mantua and his brother Don Ferrante will hire a mind deep enough to fill their coffers.

The Duke of Brissac invites him for his viperous wit.

Emperor Charles—Charles!—pleads charmingly with him to tutor his son.

Ludovico will go for the gilt, levying taxes,

While Nicolò trudges back to Venezia to beg a roof from brother or sister.

My foes have lost more than I.

Seneca says it: a man who loses his honor has nothing else to lose.

(Screaming): I curse them! They will not survive me!

(Exit TARTALEA. MELENCOLIA stares sadly after him, then follows.)

Interscene

CAR1: Indeed, what is this mortal life other than inanity, emptiness and dream-shadows?

Scene II

Cardano's house in Pavia, c. 1557. His son ALDO is rummaging around amidst the belongings. MEL, upstage, sets the hour glass. Enter CHIARA.

CHIARA: What are you doing, Aldo?

ALDO: Nothing.

CHIARA: You've been in jail, again.

(ALDO only stares at her.)

Nothing is all you have to say for yourself?

(No answer.)

I'll pray for you, brother.

(She begins to kneel.)

ALDO (Laughing derisively): It's too late to save me, sis.

CHARA: I'll never believe that. (She extends her hand to his chest.)

There is good in you.

ALDO (Turning away): What makes you think so?

CHIARA: You are your father's son. You are your mother's son.

ALDO: Hah! My mother is a fleeting shadow beneath the moon. I hardly remember my father. He's too occupied traipsing around Italy, Europe, England, Scotland, doing whatever he does. Selling fortunes.

CHIARA: He loves you. I love you. (She attempts to embrace him.)

ALDO (Breaking free): Sis, you are the innocent. It's a wonder you've avoided the whorehouse 'til now.

CHIARA: Are all women whores, then? What did get into you?

(MEL puffs up her cheeks and blows in his direction.)

Since you were a child you have sought misfortune.

ALDO: The opposite.

(Enter CARDANO, who has been watching from the doorway.)

CAR: It is the force of that long ago dream.

CAR1: (Not so jauntily):

His mother miscarried, the dice rolled badly, not once, yes twice.

Two still-born sons, born prematurely, foretold surely what was unfolding.

CAR: What are you doing, Aldo?

CHIARA: I've asked, Father. As always, he is doing nothing.

ALDO: I'm short of silver.

CAR: The more I give you, the more you swallow. You are a deeper pit than Hell's abyss. Where does the money go?

ALDO: You needn't guess. My vices are yours.

CAR: My patience is ended. Not a *soldo* more for you to squander. No longer will I bail you out of prison. If only you had minded your hours...No, the time has come for me to get together a dowry for your sister, which I do with pleasure, for unlike you she causes me no vexation.

(Suddenly a loud tremor. Cardano grasps the door frame or a wall, as if the entire house is shuddering, then his heart. MEL ignores everything as she rings the bell from the etching.)

CHIARA: Father! What has happened!?

CAR: You didn't hear that?

CHIARA: No, Father.

CAR: You didn't feel that?

(CHIARA shakes her head. ALDO waves dismissively.)

(To his left shoulder): Tell me what it means!

(No response.)

Una parola!

(Enter GIAMBATTISTA.)

ALDO: Look what the cat's dragged in.

(MEL offers ALDO a dead mouse.)

GIAM: You should be so lucky. Father, what is wrong?

(CARDANO is still in shock.)

ALDO: He's seeing things again.

CAR (Hoarsely): Hearing things.

GIAM: And what are you doing here, brother?

CHIARA: What he is always doing: rooting in the most fertile soil for the tastiest truffles.

ALDO: I'm joining Gian Andrea's expedition against the Turks. I'll need to equip myself.

GIAM: The only expedition you've ever joined is the march to jail.

(ALDO moves on GIAMBATTISTA.)

CAR: Sons!

(MEL parts them. ALDO catches sight of a horoscope on the table. He lifts it, scrutinizes it.)

ALDO: What is this? A geniture of Our Savior?

CAR (Straightforwardly): Jesus Christ himself.

GIAM: Another of your celebrity horoscopes?

CAR: I have gone beyond previous authors in determining God's timing of the unique event. (Trying to be cheerful):

The star of Bethlehem was of course a comet, signifying great portent.

Spica Virginis was near the ascendant, making the Savior transcendent,

eloquent.

CHIARA: Father, you should not publish this. The Church may take offense.

GIAM: Softly put, sis.

CAR: Ah, the public gobbles up this sort of thing, like chocolate. It has helped pay the rent—and your education. What do I care? I am steel-tempered against attacks. I know you've heard:

(Again, not too jauntily, as MEL attempts to read a huge tome without success):

The terrible Joseph Scaliger condemned my bestseller, *De Subtilitate*.

Subtlety, you well understand, is responsible for all our difficulties,

Intricacies for the senses to grasp the physical,

Complexities for the mind to comprehend the spiritual,

Scaliger didn't comprehend. Vulgar! Latin execrable!

For nine hundred pages he ranted! His assault is longer than the work itself—the longest book review in history! Hah! The funniest thing is that someone told him his review had killed me! He believed himself to be my murderer!

He has written me with abject apologies.

CHIARA: But father, a horoscope of the Savior!

CAR: Today a ferocious dog leapt at me while I was riding. I bent low over my mule's back and the dog flew just over me, gnashing its teeth at my neck, but missing me. I then rode on, distracted at what had occurred, and ended up in a cornfield, unless it was a hallucination.

Someone is secretly planning to destroy me, to remove me from Pavia. He will soon strike, but miss. I see all this as if it has already taken place.

GIAM: The cornfield signifies things remembered. Someone from the past.

CAR: Yes...The horoscope, I'll bury it somewhere obscure...Well, Giambattista, my sweetest son, what news? You cannot know how proud I was to see the doctor's mantle conferred upon you. You have become my worthy successor.

ALDO (Bowing): The great doctor, junior.

CAR (Ignoring ALDO): But mind your hours, for only then will you possess

time. (To ALDO): As for you...

(He waves dismissively at ALDO. Enter two male SERVANTS, one with a lute, the other with food.)

SERV: Will Messer be having guests for lunch?

CAR: (Putting his arm around one of SERVANTS): Just the four of us. What has the maid prepared?

SERV: Yams from the Newfound World, wild boar basted with rose water —

CAR: No river crabs?

SERV: Not today. A salad of sow thistle and boar's brains.

CAR: You have pregustated everything?

SERV: As always.

CAR: Excellent.

(Exeunt SERVANTS.)

GIAM: I do have news, Father. I've wed Brandonia.

(CAR steadies himself against the doorframe, as if the house is trembling again. Lights down.)

Scene III

Giambattista's kitchen and a street. Enter GIAMBATTISTA into the kitchen as another MAN exits. BRANDONIA is at the table, disheveled as she prepares a meal.

MEL reacts to everything in this scene with increasing alarm and despair.

GIAM: Who was he?

BRAN: What do you care? A man. Not too handsome.

GIAM: Always you taunt me.

BRAN: A butcher, then.

(She offers him a stalk of celery. He casts it aside and pulls her to her feet. They embrace ferociously.)

GIAM: I do prize your convulsions beneath me.

BRAN: *Dare a me!*

GIAM (Glancing offstage, breaking off): The children!

BRAN (Laughing): Why do you care, my love? They're not yours.

GIAM: Again you...Whose?

BRAN: Whose? Who knows? (She laughs again.) Yours. Come here! I want to taste your sweat.

(They embrace again.)

Tell your father we need money.

GIAM: For your own father and brothers to pocket?

BRAN: Let the children go hungry, then. Kiss me.

(GIAM begins to loosen his belt.)

No my love, not today, not in my condition.

GIAM: Your condition?

BRAN: I am with child.

GIAM (Holding her at arm's length): Another. Dare I ask?

(BRAN shrugs. GIAM rushes out of the room. On the street, he staggers around with this head clasped between his hands. MEL performs a frantic dance in contrary motion.)

GIAM (Screaming): Nooo! How she torments me! I can't bear it any longer! I'll kill her!

(He stops near a dark corner. TARTALEA, cloaked or resembling a rooster, steps slightly out of the shadows, hands him a vial of poison and disappears. GIAM staggers on. Lights go down. When they come up, GIAM is found in the kitchen. He sprinkles the poison on a loaf of focaccia. Enter BRANDONIA, more noticeably pregnant. MEL continues ballet.)

BRAN: I am famished. This child...

GIAM: Here, have some bread. It will ease your insatiable appetite.

BRAN: (Eating): You've forgiven me, my love?

GRAN: As always, my love.

(She dies. MEL rings the bell of the etching. Exeunt.)

Scene IV

Cardano's house in Pavia. CARDANO is alone. Enter a MESSENGER.

MESS: Messer Cardano, your son, Giovanni Battista, has been arrested for the murder of his wife; he's being held in Milano prison.

CAR (Seizing him by the collar): Don't dare lie to me, man!

(MESS hands CAR a letter. CAR reads it and nearly collapses. MEL kneels and weeps over him. MESS helps him to his feet. CAR finally dismisses him. Exit MESS. CAR puts on a cloak and exits.)

CAR1: To this day I am unable to believe that moment...

Scene V

Downstage: a street in Milan. Upstage or in the heavens: an executioner's platform, where MEL is standing. Enter CARDANO. He begins pounding on doors.

CAR: Help me, please!

(No response.)

My son is imprisoned! Help me!

VOICE1: There is nothing to be done, Doctor. Your son is a murderer.

CAR: Help, I beg you!

VOICE2 (Like a rooster's): Why should I help you, Cardano? You have spent your career blocking my advancement.

CAR: Do not turn...please!

VOICE3: For the past twenty years you've mocked me. I won't lift a finger.

CAR: He will be executed!

(Sound of door closing. CAR continues to pound on doors.)

VOICES: I'm sorry, there's nothing more to be done.

He's confessed the crime.

It's in God's hands.

He is a murderer.

CAR: It was a fit of madness! Forgive him! Please, I beg of you, *Aiutami!*

(He falls to his knees. GIAM is led to an EXECUTIONER, who cuts off one of his hands. He screams horribly. He is then beheaded. CAR eventually rises. During following MEL is motionless, head bowed as a funerary statue. The madrigal *Tutto 'I di piango* of Orlando di Lasso may be played in the background.)

CAR: O my son, my sweetest son!

What threnody shall I sing as these stars in the calm sky

avert their glance,

Lest they gaze down on this palace reeking of blood.

You, stars, who imbue gems with their temperaments,

What temperament did you steal from my son?

What qualities did you inspire in senators and princes,

That they scorned the cleansing of our defiled house?

Pierce me with your weapons, ye mad gods!

Strike from me this hated life,

Or I shall do it by my own hand!

(Screaming): You have ripped out my heart!

I am Hell bound, but I shall feel no flames.

You have burnt my soul to ashes.

(Trying to rap):

Stars that glimmer faintly, deceitfully flickering.

False friends, quivering light that pierces, shatters...

(He fails. Weakly):

Time is my possession!

Certain was I that my predictions would halt the stars in their courses.

I foresee all and stay nothing: no hand, no executioner's axe.

What I'd give to turn that glass, to perceive grains running skyward.

Still, they'd fall, and in falling drag time ever forward.

Wife, by Fortune blessed not to have witnessed

this issue of our cursèd union.

Fortunate by death to be blinded...

(He begins to wander around, takes out a dagger, considers using it on himself. BYSTANDERS are watching him in puzzlement.)

I cannot breathe...Heart, beat, cease not thy pulse!

(He eventually drops the dagger and wanders on.)

B1: He's gone nutso.

B2: *Pazzo.*

CAR: My son, I'll rage, until every sage is enraged at the fates who robbed your fame. Your name shall echo through the corridor of ages.

(He bites himself on the left arm and twists his arms into contortions.)

B1: For sure it will echo loud enough: "murderer."

INDISTINCT WHISPERS (Reverberating):

Murderer...! Killer...! Madman...!

He's lost his mind! Mind...his mind...lost...

(Exeunt.)

Scene VI

A street at night. Enter CARDANO, again wandering. By this scene, he should

resemble CAR1. The room in which CAR1 is standing should be more prominent now.

CAR: Lord, pity me. I cannot get beyond this. My life is no longer worth living.

VOICE OF ROOSTER:

Why do you mourn, Girolamo? Because of the death of your son?

CAR: What better cause to weep? I have been robbed of that which was dearest to me on earth!

VR: Take the emerald on the chain you wear and put it into your mouth.

(CAR does so.)

CAR: Remarkable this sense of lightness, as if I am borne away on a dream of forgetfulness, the memories of my son receding far below.

(TARTALEA steps out of shadows.)

TAR: No one has given me a gem of forgetfulness, Girolamo.

(CAR lets the emerald fall from his mouth.)

CAR: You, you have caused all my misfortune, Nicolò!

TAR: Oh, I am glad. After that contest, my fortunes dashed, desperate poverty, while your star rises ever higher at my expense.

CAR1: At your expense! With my *Ars Magna*, I advanced tenfold the field of arithmetic, or as some call it now, algebra. I discovered new properties of numbers and simplified the treatment of uncommon formulas. I dealt with confused and reflex proportions and the treatment of infinity. I

discovered new musical tones and intervals...

CAR: At your expense!

TAR: You have done nothing yourself, Girolamo! Without me, without your creature, Ludovico, you would not have treated infinity, but zero. Your one, your single accomplishment is fame.

CAR: What greater accomplishment can there be?

TAR: To live with honor.

CAR1: O tempora! O mores!

Honor is a banner, held aloft by those surrendered to obscurity before a
flag of greater wit and subtlety.

CAR: Nicolò, when I was boy, in the gray of one morning I dreamt I was running along the base of a mountain, around which surged a thronging multitude from life's every station. When I asked where they were going, the throng replied, "To Death!"

I ran up the mountain, at first with difficulty due to its steepness, then with increasing ease. At the summit, I found myself on a lonely plain overlooking the earth. Urged on by my fear, I ran across the plain until at length I reached a cottage. There, I suddenly found myself holding the hand of a boy of about twelve. From this vision I read a manifest prophecy, pointing toward the immortality of my name.

CAR1: You had no chance, Nicolò. The dice rolled against you long before our great contest.

TAR: You make me laugh! No one understands everything, neither you nor I. From my work on cannonballs, an entire new science will be born. Men will explain the motion of planets and stars. Mark my words. Mark this as well: the scales have only begun to level, dear Girolamo.

(MEL holds the scales in the etching, putting her finger down on one side.)

Scene VII

Ferrari's well-appointed house in Bologna. MELENCOLIA is admiring it. Enter FERARRI and MADDALENA.

MAD: It is a wonderful house you have built, Ludovico, and I am eternally grateful that you have allowed me to live here with you.

(They kiss.)

FER: I could do naught else, after your husband died, dear Maddalena. What, after all, are brothers for?

MAD: In truth, I could not have wished for a better one, but I hear a sadness in your voice, Ludovico.

FER: Cardano is unable to surpass the death of his son. He mourns him eternally and knows that Tartalea has cursed him, us. He warns that

Nicolò will use the Inquisition against me.

MAD: Truly, the Inquisition would find a weapon in your tongue. All the same,
I love Tartalea.

(Enter TAR. She kisses his cheek. Exit TAR.)

FER: Our sworn enemy! Not to mention the ugliest son of a bitch who ever
lived.

MAD: The stutterer T—Tartalea s—bless him—set you on the road to s—success.
He played directly into my—our hands.
The contest against him, your victory over him,
Brought honors well delivered from Pavia to Bologna.

FER: Not such a distance, after all.

MAD: Cardinal Morone, the governor Ferrante,
Neither phony, nor full of baloney,
Took you into service, surveying the province,
Taxing the impoverished 'til the peasants promised.

FER: When not dishonest . Else they died.
But four thousand ducats, a horse, two servants,
Not bad, only slightly debauched.

MAD: A professorship of math at University of Bologna,
Begot more than a bath of cannoli.

FER: In truth, my waste line's somewhat expanded.
If the saddle hadn't aggravated the fistula in my ass,
My fortune from math would have even more amassed.
Competence in algebra has consequence, indubitably.

MAD: Indeed.

FER: Let us drink to your upcoming betrothal and matrimonial bliss.

(They raise two glasses in a toast. MEL attempts to warn him, to no avail. Too late, FER realizes he has been poisoned and dies.)

MAD: Thanks for the dowry, brother.

(MEL rings the bell in the etching. Exeunt.)

Interscene

CAR1: I recognized the eclipse—did I not?— as a portent for the death of my son,
but I failed to act. Ludovico, my finest student! You wouldn't heed my
warnings...You did not perceive the stutterer ...Your sister, in league with
Tartalea, shed not a tear at your funeral; you left her everything—fool—
and she married within a fortnight...
But my avengement began. Not a single person who caused me sorrow
has lived to tell about it...

Scene VIII

Cardano's house. Enter CARDANO, wearily. MELENCOLIA offers him Gatorade. He walks by.

CAR: O son, God has not forgotten you! di Seroni, father of that worthless whore, already sits in prison for his debts. It shall be thus for all those who procured your doom. Lord, let me forget...

(He puts the emerald into his mouth. Then he picks up a letter from the table and reads, staggers. He reads a second one and nearly collapses. Enter CHIARA. He threatens her with a letter.)

CAR: You! My very flesh and blood! After all the rest, you and your husband accuse me...

CHIARA: Father?

CAR: You accuse me of unspeakable acts with my two boys, my tasters. That on behalf of the Senate and the College you cannot acknowledge me, that I am a disgrace to the university, a dishonor to Italy itself...! That I must never teach again...

(CHIARA takes the letter and examines it, then falls at her father's feet.)

CHIARA: Father, I swear to you on all that is holy, I did not write this, my husband did not write this! You cannot believe it, Father! I beg you, do not believe

it!

(She grasps a crucifix and kisses it.)

I swear, please!

CAR: And this?

(He hands her second letter.)

CHIARA: (Reading): "Not only have you shed on me the great pox in the person of your unclean daughter, but you have given me a wife whose demands night and day are more than can be met by the commonest street whore. When I reprimand her for her insatiable lusts she as soon raises her dress to a servant...Signed Bartolomeo Sacco."

(In horror): My husband. No, Father, never! How can you credit both missives, one with our names side by side and this other—unspeakable filth...? I am barren of children, is that not enough grief for this empty life? But pox—no, I swear it! My husband—never! This is a hoax, an infamous attempt to ruin your reputation and mine. Believe me, please...

CAR (Wearily, embracing her): You are right, my darling daughter. We must uncover this deception.

(Exit CARDANO. CHIARA busies herself.)

CAR1: It is true, one of my former students admitted to forging the letters! My own student! Yet there was something behind it...

(Enter CAR.)

CAR: Chiara, darling, forgive me for doubting you.

CHIARA: I fear that is not all, Papa.

(She motions on two SERVANTS, one with lute.)

SERV1: Master, the Academy has requested that we participate in the singing of a new mass by Palestrina next week.

CAR (To SERV2): You have no more a voice to sing with than that frog who croaks outside the window every night, disturbing my sleep.

SERV2: They said I could help fill out the choir.

CAR: Why do they want you both out of my house? No, you cannot go.

(Exeunt SERVANTS.)

(To CHIARA): This can mean only one thing. You must watch the maid-servant closely, or do the cooking yourself.

(CHIARA nods.)

CAR: No choice is given now. I must remove myself from Pavia at risk of my life.

(Exeunt.)

Interscene

CAR1: The day my son was arrested, by the merest chance I looked at my right hand to see on the root of my ring finger the image of a bloody sword. Would that I had heeded the portent! Over the days it grew and grew until on the morning he was executed it flamed a bloody red, and then abruptly disappeared. Tartalea, how did you intend to destroy me? Cicero, father of eloquence, did you not show how we may find consolation in the death of a child, how out of the greatest of adversities we may find new meaning, and testify that they are destined for a purpose not to be despised?

Scene IX

A dark street. CARDANO is walking. Enter TARTALEA.

CAR (Shrinking): Have you not done enough? One son dead, Ferrari dead, me—forced to resign my position at Pavia, move to Bologna. My daughter's reputation—ruined!

TAR: Ferrari—he never did solve the questions I set correctly.

CAR: No, Nicolò, it was you, you who failed to understand how he advanced geometry by modifying Euclid's third postulate.

TAR: That was a trick question about the heptagon. You intended to deceive me with equal sides and unequal angles, when you meant equal sides and equal angles.

(MEL is attempting to construct a regular heptagon with straightedge and compass and having no success.)

CAR: Perhaps. What other letters do you intend to forge?

TAR: Bah! I've written a book on how to raise sunken vessels; it will be of great value to Venezia, Mistress of the Seas.

CAR: You've kept a dossier on me, supplied my enemies with information.

TAR: That's more likely. Beware, Girolamo.

(Exeunt. MEL levels scales further.)

Scene X

Cardano's house, in Bologna, 1570. Enter CARDANO, more wearily than before.

He sees that the room is in disarray, nearly ransacked. He begins to search ever more frantically through the cupboards and trunks.

CAR: Jewels...the gold...! My medical instruments...All of it!

(He catches sight of ALDO and an ACCOMPLICE about to flee. ACCOMPLICE escapes. CAR advances on ALDO.)

I would not have needed to catch sight of the heel of your boot to know

who was responsible for this. Enough, Aldo, I say enough!

ALDO (Grabbing a candelabra or cresset): Back, old man, one more step and I burn down the house—with you in it!

(Blackout.)

Scene XI

Stage is divided between a prison cell and a street. ALDO is sitting in the cell with ACCOMPLICE. MELENCOLIA is eating a terrible prison meal, grimaces. A GUARD admits a LAWYER and CARDANO.

LAW (To ACCOM): You, slime wad, for you it's the galleys.

(Both ACCOM and ALDO react with great alarm.)

ACCOM: That's a death sentence!

CAR (To ALDO): You, Aldo, I am disinheriting you. From this moment onward, you will receive nothing more from me in this mortal life, nothing. Not one *soldo*, not a *denaro*, not a rolling pin or a spoon from your mother's family.

LAW: Henceforth you are banished from this city, and any city where the infant your father took from your brother Giambattista reside.

ALDO (To CAR): Son of a whore! I'll be revenged on you!

(He advances on CAR. The GUARD hurls him back against the wall.)

LAW: Ingrate! Consider yourself lucky that you have—that you have had a father. Consider yourself lucky that he forbore more serious prosecution after you stole and gambled away everything he owned! Go!

(GUARD leads him onto the street, where TARTALEA steps out of the shadows.)

TAR: Aldo.

(ALDO turns.)

TAR: Your father cast a horoscope of Jesus Christ, Aldo.

ALDO: Who are you? What of it?

TAR: It was published in his commentary of Ptolemy's *Almagest*, long ago.

ALDO: And?

TAR: Think, *stupido*.

(Exit ALDO as the GUARD leads him on to the city gates. Enter MEL, leading CARDANO toward TARTALEA as if to effect a reconciliation.)

CAR: I have lost both my sons!

TAR: You expect pity, Cardano?

(MEL shrugs in defeat.)

My family perished long ago, through no fault of my own. Yours, through *Eccellenza's* divine neglect. You should have prophesied it. You prophesy everything.

CAR: Meseems I hear a rooster speaking with human voice. Even in this hour...
It is you, the stammerer; why can't I be rid of you? Why have you done
this to me?

TAR: I laugh. At life's every turn, your name, Cardano, buzzes in my ears, like
a nasty wasp. You, always, credited with my discoveries. You, always,
bestowed magnanimously my work on the world. You, always,
proclaimed the greater mathematician. Your creature, always,
vanquished me in open contest.

CAR: He did. And I am the greater mathematician.

TAR: Bah! What have you written since the *Ars Magna*?

CAR: Mathematics is a young man's game. I write—

TAR: —b—bestsellers.

CAR: Most is crap.

TAR: True confessions.

CAR: You have been silent long, nothing from your pen in years—

TAR: False. I've disputed Aristotle's law of motion, in print.

CAR: That is heresy. You'll burn for it, in the universities at least. I see all.

TAR: I shall die of hunger before then, thanks to you, Messer Prophet, but my
ideas won't burn. I have said it: a new science shall rise from my ashes.

(MEL examines the heavens with a telescope.)

CAR: Since when do you have the gift of prophecy, Nicolò? That's reserved for me.

TAR: I am sensible to make prophecies that don't depend on the stars. Beware.

CAR: You never wrote anything more about cubic equations.

TAR: True. There was no point after you published your theft. But you, Girolamo, may stop shitting from your pen. From your mountains of excrement, only your *Ars Magna* will be remembered, to your curse and my regret. I am not finished with you yet, Girolamo, beware.

(Exeunt.)

Scene XII

Cardano's house, Bologna, 1570. CARDANO is at a writing table, reading, with CHIARA nearby. MEL turns over the hour glass.

CAR: Aldo, banished. What stars imbued him with such a base character? Chiara, the letters impugning your character have never ceased.

CHIARA: The deed is done, Father, and my good name lies in the gutter; forgive me.

CAR: (Throwing the letters down): Daughter, you alone among my children have caused me no grief, yet you must depart. As long as you are mine, you'll be the victim of these...I have no words! Flee Bologna with your

husband, vanish happily into the sands of time.

CHIARA: How can you suggest that I abandon my own father? Take heart, Papa,
Fortune must turn soon, I feel it.

(A heavy knock on the door. MEL opens it. She ushers in two DELEGATES from the Holy Office.)

DEL1: Messer Girolamo Cardano?

CAR: Yes?

DEL1: You are under arrest.

(CAR backs into a corner, terrified. CHIARA leaps to her feet. DEL2 moves toward CAR.)

DEL1: By order of the Holy Office.

(As DEL2 restrains CAR, DEL1 hands him a message.)

CAR: The Pope—?

DEL2: The Holy Office charges you with impiety.

CHIARA: Father!

DEL1: Come, gather your things.

CAR: Chiara, inform Cardinals Morone and Borromeo immediately! They will intercede on my behalf.

CHIARA: At once, Papa!

CAR: Remember me!

DEL2: *Eccellenza* should think twice before casting horoscopes of Our Lord, Jesus Christ.

CHIARA: Papa!

(Exeunt.)

Scene XIII

An inquisitorial tribunal in Bologna. The INQUISITOR sits on a tribunal, a SCRIBE at a writing table. CARDANO sits on a stool before the tribunal. MEL is standing between them, in the manner of a defense attorney.

INQ: Girolamo Cardano, have you ever been summoned before the Inquisition?

CAR: No, I have not.

INQ: Have you ever done anything that should be judged by this tribunal?

CAR: I don't understand.

(MEL shrugs in agreement, indicates to audience that they won't understand either.)

INQ: Do you wish to denounce yourself?

(MEL indicates that the question is outrageous.)

CAR: No, I do not wish to denounce myself. For what reason?

(MEL counts on her fingers.)

INQ: Have you not cast a horoscope of Our Lord and Savior Jesus Christ?

CAR: Yes, I'm not the first, but mine was the best.

(MEL expresses agreement to INQ.)

INQ (To SCRIBE): Have you seen the others?

(SCRIBE shrugs.)

If your predecessors were still alive, they would be sitting where you are now.

CAR: It was an admirable nativity.

(MEL expresses agreement .)

INQ: Admirable! Was it any less than perfect? Do you deny Christ's divinity, his sanctity and his miracles?

CAR: I do not understand.

(MEL expresses that she doesn't either.)

INQ: Do you maintain that Christ's divinity, his sanctity and his miracles are due to the stars rather than to God?

CAR: Of course not, but the Creator, through nature, gave him everything that could be favored by movements in the firmament: piety, simplicity, charity, justice, faith ...I bestowed upon him ten major signs and portents: Jupiter and Spica Virginis on the ascendant, a fiery comet for the star of the Magi... What else do you want?

INQ (Scratching his head): Did you write a book praising Emperor Nero—

CAR: I've written a book about everything.

INQ: —the tormentor of Christian martyrs?

CAR: Everyone has their laudable points.

INQ: In your book *De Rerum Varietate*, did you not denounce the Franciscan Order?

CAR (Wearily): That. The infamous printer inserted that remark to discredit me, but the fraud was quickly exposed and the passage expurgated from subsequent editions.

(MEL fact-checks a book lying on the tribunal, indicates nothing to be found.)

INQ: In your *De Subtilitate*, did you not include a dialogue in which Christianity was compared to other religions? Do you not maintain that Christianity is the one True Faith?

CAR: Everything has its pluses and minuses. Christianity did wipe out the others, as I recall.

INQ: That's a relief.

CAR: Do with me what you will. I am wearied of this life and have nothing left to live for. (Abruptly): Note for future memoir: Do I actually know anything, or do I only seem to know?

(To his left ear): Don't answer that question. (A beat.) *Silenzio!*

INQ: Messer Cardano, due to your station, your age and the fact that I can't understand a word of your writings, I am placing you under house arrest.

You are henceforth banned from teaching and from publishing, which I am sure will relieve the paper manufacturers of north Italy. Dismissed!

(Exeunt.)

Scene XIV

The stage is divided between a room in Rome and a room in Venice.

CARDANO is standing in the first. The banner bearing the motto TEMPUS MEO POSSESSIO is now fully visible on the wall, as is Dürer's etching, absent the figure of MELENCOLIA. CHIARA is sleeping at CARDANO's feet, while he is throwing manuscripts in the fire. The second room is dark and contains only meagre furnishings. TARTALEA sits in a dark corner, writing. MEL is perched to one side by the hour glass, which she turns at the beginning of the scene. She reacts to speeches as they unfold.

CAR: Note for present memoir: Time is my possession!

(Sighing): The reverse, these passing days force me to admit.

Five years now—five, count them— I have been confined to Rome, fed by the Pope, forbidden to teach, to publish...to live.

(Looking at a pamphlet): This one was good. (He puts it down.)

This one was useless. (He throws it into the fire.)

One hundred seventy down, one hundred eleven to go.

(He picks up an unfinished manuscript.)

My autobiography, filled with portents and prodigies, not to mention Ptolemy and prosody, some frivolity, a little theology, much philosophy and more pathology, will hit the shelves. In a century or two. Then it will sell like eschatology—that's the end of the world for those of you ignorant of mythology. You may rely on it.

O my sons, my sons!

What did I do with my will? Let me bequeath Aldo six *soldi* a week.

(Sighing): It is difficult to disinherit a son, even such a scoundrel.

(CAR continues to throw manuscripts in the fire.)

TAR: *In Dei aeterni nomine amen.* In this, my last will and testament, I commend my soul to God, All Highest, and pray with all my heart that His Majesty forgives all my sins and welcomes me into His Grace.

(MEL examines TAR, shakes her head.)

TAR: Soon enough I will join my family. I have nothing to bequeath...anyone... except...(He rummages through a box): a box of four sheets, five used table linens, an old cloak of black fabric, a jumble of thread...(He looks around): books, a few ducats.

(Sitting again): To posterity, if there is one, I bequeath my General Treatise on arithmetic, my best work. In it, I have not forgotten the people, the

merchants, their mathematics, or the mistakes of Cardano and Ferrari.

Scholars will quarry my *memento mori*.

As sure as stars adorn Heaven's glory,

From my Treatise, Italy will learn the true story.

Bah. Cardano, Messer Prophet, your shadow will eclipse me for all time.

The penumbra of that imp, your creature, will obscure me.

(He rises, walks toward CARDANO and addresses him. CARDANO recoils.)

TAR: *Non absolvo*. To my dying breath, I curse you. With every stroke of my pen, I discredit you. (He spits.)

CAR: N—Nicolò, is that you?

TAR: We are forever bound, Girolamo, you and I. Chained by history's invisible links, forged through time, too fast to be broken by muscle or will. We are buried together.

CAR: Stutterer, you, everywhere! Out of my sight! Begone!

(TAR advances, circling, spiraling inward.)

A—agreed, you were the greater mathematician—. How can I even consider such a ridiculous idea? You did not see in me a devoted friend and better, only a rival, an enemy.

TAR: Is it not time, Girolamo? Did you not prophesy the hour of your own death? You never err.

CAR: Have you come for me, Nicolò? Begone! Away! Thank me for completing your discovery, bringing it to the world!

TAR: (Continuing to advance): *Non absolvo.*

CAR: Granted, granted, I foresee that those childish dialogues on your new sciences may someday be taken up by others, who will correct your egregious errors, which deceive all but the most clear-sighted of men.
Leave me!

TAR: *Non absolvo.*

CAR: Life! My marriage...what a disaster... ! Nicolò, what role did your hand play in the death of my son? The destruction of my daughter's reputation? This prison? Confess!

TAR: *Non absolvo.*

CAR (Clasping head in hands): *Silenzio!*

(TAR steps into the shadows.)

CHIARA (Waking): Father?

CAR (Embracing her): Daughter, you have been my only comfort in my old age. You have stood by me, at great expense to yourself and your husband. How I thank you.

CHIARA: Do not speak so, Father. The only expense would have been to my conscience had I abandoned you.

CAR: I remember those days when you sat on my knee and recounted your dreams. The time has come for you to tell them to someone else. Vanish, I say it again, vanish happily without trace into the sands of time. My hours are numbered and you can do nothing more for me.

CHIARA: Father, you have years, many years.

CAR (Abruptly, angrily): Leave me!

CHIARA: Father, no!

CAR: Begone! Become a ghost whose spirit is free to wander this vast, strange universe without strife and without fear. Go!

(She still hesitates.)

I command it!

(She embraces him. Exit CHIARA.)

CAR: Sleep well, child, if you can. O Great Compass, I shall now be silent, for thou dost guide us over boundless seas, through melancholy nights and through the pathless wilderness.

Wither am I bound? I have lost my bearings.

That buzzing never ends...You, you are still here? What is the date?

(He checks a calendar.) Yes, you are right. Time flies.

TAR (From the shadows): *Non absolvo.*

CAR (Waving) Away...! I must make certain that my prophesy is accurately

fulfilled. When all is said and done, I never err about such things...

TAR (Whispering): *Non absolvo.*

(CARDANO picks up a dagger, examines it. Exit CARDANO. MELENCOLIA takes her place in the etching.)

Curtain.

Appendix A

If a young ALDO is available, this version of the opening of Act II, Scene III may be used:

Act II, Scene III

Cardano's house. CARDANO and CHIARA are at table. A knock at the door.

He answers with his arm around her. MELENCOLIA ushers to the door a POLICEMAN with Cardano's second son, ALDO.

CAR1: Neither did Nicolò understand that all things human are transitory and no more than a moment's breath. Even our happiness is like effervescent water. There is no panacea; the troubles of the soul are altogether incurable.

POL: *Eccellenza*, we caught this one lifting purses in the market. I'm turning him over to you. We wouldn't want word to get out that the son of Milano's greatest physician is a *borseggiatore*. Next time—prison.

CAR: Thank you, Signore, I am grateful for your consideration.

(POLICEMAN shoves ALDO into the room and exits. CARDANO begins to beat his son.)

CAR: Worthless miscreant, dragging his family's priceless reputation through the gutter! Incubus, sent to destroy us, offspring of that cursèd union with your mother! Beelzebub, reveling in dung!

CHIARA: Father, stop! Stop!

(She attempts to restrain him. MEL hovers helplessly. Eventually CARDANO calms down and embraces ALDO.)

CAR: Ah, Aldo, my son! What am I to do with you?

ALDO (Pulling away): Nothing, dear father!

CAR: I say: attend to your books. Look to Giambattista and your sister as exemplars!

ALDO: So I can be *dottore di merda* like you? Or is that *doctor stercore*?

CAR: You do know something.

ALDO: That in schools, fools teach fools.

CAR: How will you advance yourself?

ALDO: They need torturers in the jails.

CAR: You'll end up on the rack sooner than turning it!

ALDO: An executioner then.

CAR: How is it possible that this issue is my son? Out of my sight!

(Exit ALDO.)

(Sighing): Future generations will look at such woes and laugh, for what is this mortal life other than inanity, emptiness and dream-shadows?

