

Scintillating baroque..



.. Serious **fun**



Director from the Continuo

Andrew Lawrence-King

Early Harps & Research

Early Opera &
Historical Productions



Action! Action! Action!

Having a Heavently Time:

The Harmony of the Spheres & Practical Music-making

The philosophical concept of the Harmony of the Spheres – an ideal music created by the perfect movement of the stars and other heavenly bodies – was set out in Boethius' 8th-century *Fundamentals of Music* and characterised modes of thinking for the next thousand years. The renaissance spectacular of the 1589 Florentine *Intermedi*, English 17th-century Masques, and baroque operas from Cavalieri to Handel presented visions of Heavenly Music on stage, embodied by singers and dancers. But what were the practical implications of such thoughts for renaissance and baroque musicians, and how can this ancient concept be applied in today's Early Music?

Not only early music, but also period literature, art and architecture provide countless reminders of *what is obvious about Renaissance design: that it takes its departure from theories about the ideal proportionality of the cosmos.*¹ John Orell, consultant for the reconstruction of Shakespeare's Globe, explains how the idealised geometry of 'squaring the circle' led to the actual dimensions of Tudor theatres, with massive timbers cut not to convenient round numbers, whether tens or dozens, but to multiples of $\sqrt{2}$. And the whole building, from the roof beams down to width of each seat, was proportionately scaled from a single, humanist unit: the *braccio*, the length of a man's arm. For theatre managers around 1600, even something as fundamental as 'bums on seats' derived from renaissance philosophy.

The period philosophy of music links *musica mundana* (the Harmony of the Spheres) not only to *musica instrumentalis* (earthly music-making, whether instrumental or vocal), but also to *musica humana*, the harmonious nature of the human body. Translating from Ornithoparcus (1535), John Dowland's *Micrologus* (1609) follows convention in placing both *musica mundana* and *musica humana* higher in precedence than *musica instrumentalis*. Practical music-making is therefore dependent upon these two higher manifestations of music.

In other renaissance activities as well as in music, practicalities derive from higher principles. Around 1600, writers distinguish between Science, Art and practical Use, defining these categories quite differently from our modern understanding. Science or natural philosophy was the knowledge and study of high, divine matters. Consideration of the Music of the Spheres was therefore the Science of Music.

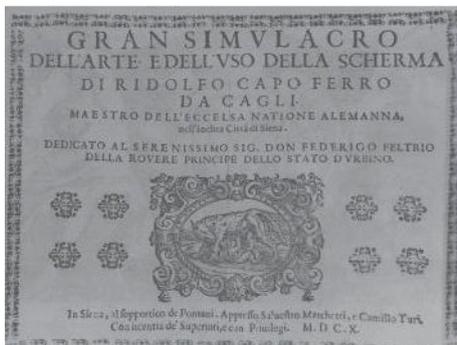
Art was a system of principles and rules to organise and govern the raw aspects of Nature. Sound itself is natural, but it is organised into renaissance music by the principles of Art. Thus Art in music is found in the rules of word-setting, rhythmic measure, harmony and counterpoint. This contrasts noticeably with the Romantic view that a “true artist” would refuse to be constrained by conventional rules.

Everyday, practical exercise of the Art was termed Use, and renaissance writers accepted that pragmatic choices might sometimes depart from the lofty principles of Science, or from the accepted rules of Art. However, such departures from higher principles were worthy only of Mechanicals – the craftsmen and workers who actually produced an objet d’art. Today we would call them musicians, sculptors, or painters: i.e. artists!

For example, a harp-player might sometimes play consecutive fifths in the inner parts of his improvised continuo realisation – against the rules of musical grammar, but almost unavoidable in certain practical situations. This would be acceptable Use, but bad Art, and would have nothing to do with lofty Science.

The word Artificial has utterly different connotations in this period: it is the highest praise, whereas today it would be a criticism. In Shakespeare’s time, the most Artificial music would be the finest music made with the highest artistry, i.e. according to all the rules of the Art. Nature is not bad, but Art refines and perfects Nature.

Thus in renaissance sword-fighting, it is a natural (instinctive) response to parry an attacker’s thrusting sword. The Art of Swordsmanship teaches rules that govern the precise angle of your sword, and guide you to riposte effectively. Of course, your opponent may have resorted to the Use of a feint. His gambit may fool you, it might be practically effective; but it would not be considered high Art. In renaissance terms, it would do him less honour than would a more Artificial victory!



Capo Ferro’s 1610 treatise on the Art and Use of Sword-fighting

Sword-fighting was often compared to renaissance Dance. There are obvious links in the practical Use (movement and interaction with a partner/opponent) as well as in the Art (the discipline of footwork, balance and timing). Similarly Dance and Music are clearly related. And the concept of the Music of the Spheres links Music to Astronomy. But where is the Science in all this?

We can begin with Arithmetic, the study of Number. Geometry (vital in art, architecture and in the opposing sword-angles of a duel) is the study of Number in Space. Pythagoras established the natural link between simple mathematical ratios and pure harmony: an octave is 2:1, a fifth is 3:2, a fourth is 4:3 etc. Elegant mathematical proportions are also found in musical rhythms. Music is the Science of Number and Time.

The movement the stars is a Science of Number, Space and Time. This three-fold complexity places Astronomy at the head of the renaissance hierarchy of Sciences. But Dance and Sword-fighting also involve all three categories - Number, Space and Time – whereas Music involves only two. Thus Dance and Sword-fighting are closer to Astronomy and ranked higher than Music. This renaissance hierarchy contrasts with the Romantic view (still held by many elite performers today) that dance is somehow inferior to abstract music, that a symphony outranks a ballet.

Renaissance Musical Time



Nicholas Poussin *A Dance to the Music of Time* c1635

From the heights of philosophy and Science to the nitty-gritty of pragmatic Use, renaissance music constantly asserts the importance of Time. Caccini's *Nuove Musiche*, the 'new music' of the early 17th-century, re-affirms Platonic priorities: text (the words of a song), rhythm, and sound last of all. "And not the other way around!", he emphasises. In contrast, 20th-century conservatoire teaching tended to focus on sound-production, placing a much lower priority on rhythmic accuracy.

Like Music, Time itself was considered within Science, Art and Nature. At a cosmic level (Science and *musica mundana*), the movement of the planets and moon, and the orbit of the Sun around the earth (for so it was observed and understood), defined Astronomical time in large units (years, months, days and hours). The highest sphere was that of God himself, the Prime Mover, turning the handle of the Universe in eternally constant, slow measure.

At the human level of Art and *musica humana* (the harmony of the human body), Time was measured by the human pulse. The resting pulse-rate for a healthy adult (and renaissance man walked, danced and duelled his way to fitness more effectively than most moderns) is around 60 beats per minute. But of course, the pulse rate varies from one individual to another, and according to our mood. Be that as it may, the renaissance musician would not want his pulse to falter or stop!

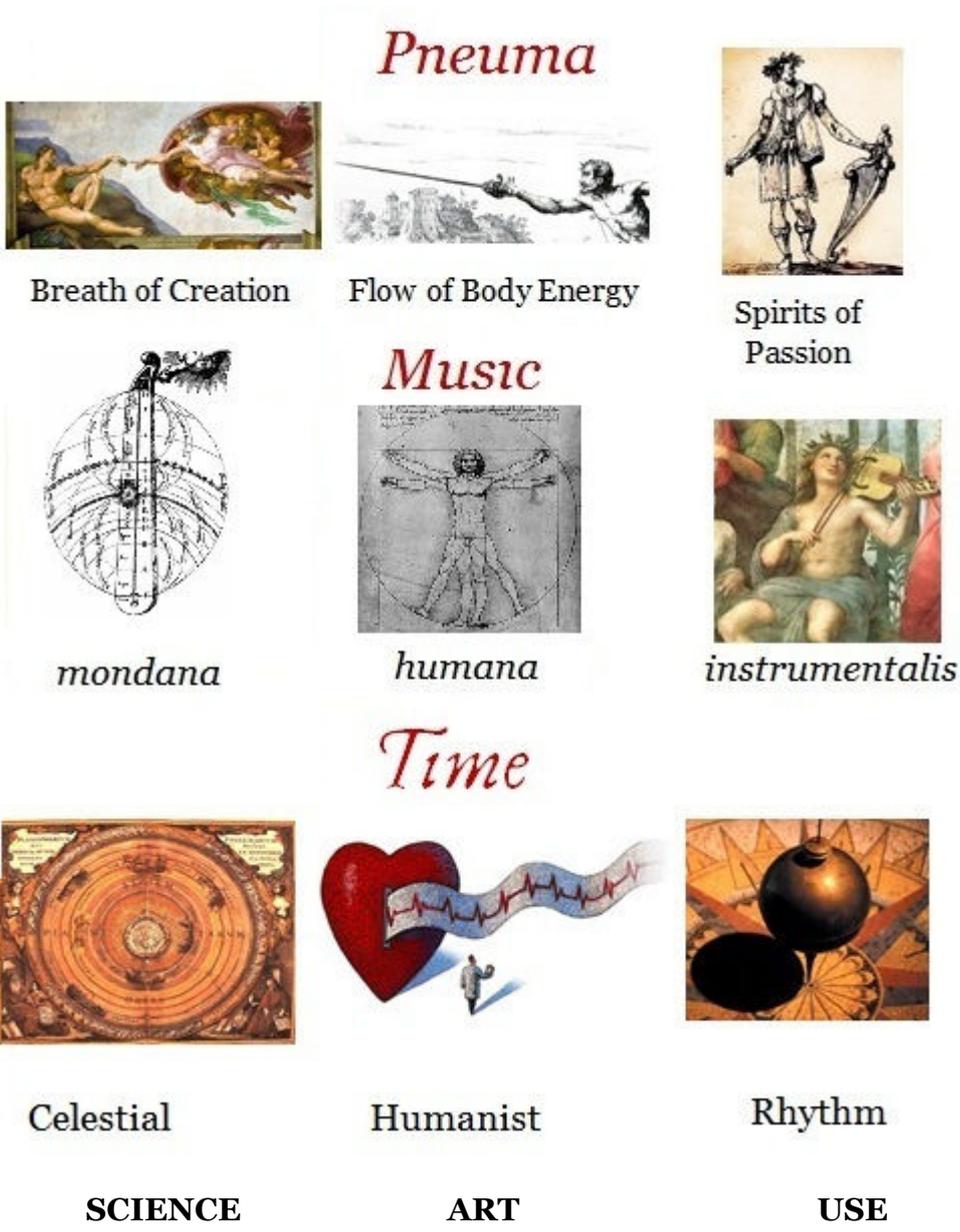
Finally, at the practical level of actual music-making (Use and *musica instrumentalis*), Time was observed in the natural movement of a pendulum. Galileo started his work on pendulum effects in 1581, and established the principle of a constant period of swing in 1602, publishing his results in *Two New Sciences* (1638)². Pendulum clocks were designed, built and refined during the 17th-century, with Mersenne (1644) establishing the length of a one-second pendulum at around one metre. Later in the century, William Clement's longcase clocks (now called Grandfather clocks) housed such a 'royal' pendulum, and music publisher John Playford advised students to hone their sense of rhythm by standing next to one.

But how was Galileo able to measure the period of the pendulum? The most reliable clock available to him was his own pulse. Here we see again the hierarchy of renaissance philosophy, linking *humana* and *instrumentalis*, but with the celestial *mondana* supreme over both.

Good renaissance music therefore has a healthy heartbeat, a steady, strong pulse. Highly artistic music has well-measured rhythm. The most philosophical, heavenly music has the eternally constant slow measure of the cosmos itself. This contrasts with the 20th-century view that rhythm is somehow 'dirty', and with a persisting Romantic notion that the most profound art should not be constrained by time.

Nevertheless, renaissance performers were very concerned to communicate the changing emotions of music to their listeners. In period medical science, Spirits of Passion were transmitted by *enargeia* from the performer's eyes, or conveyed through the ether by *pneuma*, the performer's mystic breath. My research has uncovered what seems to be a new insight into renaissance thought: this *pneuma* also has a three-fold identity.

Corresponding to *musica instrumentalis* and the pendulum measure of time, *pneuma* operates in actual performance as a means of communicating the passions from performer to listener. On the cosmic level of *musica mondana* and Astronomical time, *pneuma* is the Divine spirit of creation, the breath of life itself. My research into ancient medicine shows that *pneuma* was also recognised at the level of *musica humana* and the human pulse, as a network for communicating physical energy and proprioception through the body. Modern medicine assigns part of this function to the nervous system, oriental tradition views it more holistically as *chi*.



Time and Music intersect in the renaissance concepts of Measure and Proportion. Music is measured in a slow, regular count of time, which can be sub-divided in various proportions. Typically the guiding slow count is divided into two beats (duple rhythm) or three (triple rhythm), and these beats can be further sub-divided. The renaissance concept of musical Proportions requires that changes from duple to triple rhythm are strictly proportional, preserving the underlying slow pulse of the basic count.

So after a particular change of Proportion, three small notes in triple rhythm would last the same time, the same Tactus count, say two seconds, as two small notes in the previous duple rhythm. This contrasts with modern practice, in which the maintained standard unit is a fast count on small notes. In modern music, if in duple rhythm two small notes take half a second, then three small notes take three-quarters of a second. Modern musicians keep the small notes constant – 0.25 seconds, in this example.

The renaissance principle of a slow count derives from the perfect slow movement of the Heavenly Spheres and relates to the humanist unit of the human pulse. Although renaissance music was not normally conducted, singers could show the count by moving their arm up and down in Tactus. This simple, slow beat corresponds to the movement of a pendulum: the complete movement taking two seconds. Proportions could be shown as equal (down and up one second each, duple rhythm) or unequal Tactus (down two seconds, up one second; the complete movement still lasts two seconds). In a fast triple Proportion, there would be three beats on the down-stroke, another three beats on the up-stroke. The individual notes now move much faster, but the complete Tactus movement still lasts two seconds. The Tactus is constant.

Renaissance musicians wrote or improvised variations by dividing up the long notes of the original melody into many faster notes. Such *Divisions* or *Diminutions* require the improvising soloist to fit within the Tactus, which would be maintained by the accompanying instruments. In utter contrast to modern practice, renaissance soloists followed the accompaniment, not vice versa.

This renaissance practice of maintaining heavenly Time with a constant slow count, of respecting the rules of the Art with a steady pulse, contrasts sharply with the 20th-century assumption of expressive Rubato. With the vacillating time of Rubato, musicians around 1910 melted the structure of rhythm into plastic curves. Indeed, with the trend throughout the century for ever-increasing homogeneity in musical sound (constant legato, consistent sound-quality, ever-present vibrato), variations in time became almost the only performer-controlled performance variable.



Salavador Dali *La persistencia de la memoria* (1931):
“a Surrealist meditation on the collapse of our notions of a fixed cosmic order³”

Studies of historical recordings made by the CHARM project at Cambridge University show a change in the way rubato has been used. Recordings from before the Second World War employ Rubato to highlight significant notes, in what Professor Nicholas Cook describes as the ‘tent-pole’ model. The music slows down as it approaches the crucial note, like the canvas of a tent curving upwards towards the top of the pole. The performer dwells on that expressive note, and then gradually accelerates away from it, as the canvas curves downwards again.

Post-war recordings use Rubato to indicate phrasing, in what I have christened the ‘tube-train’ model. Musicians gradually accelerate away from the first note, and then slow up towards the end of the phrase. Similarly, London Underground rail tracks descend away from each station, and ascend towards the next station, to help tube trains accelerate and brake efficiently.

Since most modern elite musicians, including our leading exponents of Early Music, have been educated in 20th-century conservatoires, there is a widespread assumption that Rubato, vacillating time, is an artistic absolute. However, period evidence makes it very clear that renaissance rhythm respected the healthy nature of the human pulse and the divine constancy of celestial time. The philosophy of the Music of the Spheres and the harmonious nature of the human body required renaissance musicians to play in Tactus, in constant measure.

John Dowland makes this abundantly clear: *Above all things keep the equality of measure. For to sing without law and measure, is an offence to God himself...*

And Shakespeare’s Richard II concurs: *Ha, ha, keep time! How sour sweet music is / when time is broke and no proportion kept!*

Baroque Musical Time



Driving Time

Apollo and the Sun Chariot

Nevertheless, today’s Early Musicians often play deliberately out of time, seeking an expressive effect. Sometimes this comes about by the anachronistic application of Romantic practices and 20th-century assumptions to earlier repertoires. But often it is justified by reference to early 17th-century descriptions of rhythmic freedom. At the beginning of the baroque period, alongside the first experiments in what we now call baroque opera, and inspired by the humanist belief in mankind’s power and importance in the world order, musicians began to meddle with Time itself.

In the context of the Music of the Spheres, and the Harmony of the Human Body, this was a highly risky enterprise. If the perfect movement of the heavens faltered, the sky might fall. In this period, the irregular movement of a comet was regarded as an omen of disaster. And if your pulse is irregular, something is gravely out of synch in the body. Thus in Monteverdi's opera *Poppea* (1643), Ottone's physical symptoms - *il palpitar del core ed il moto del piè non van d'accordo* [the beating of his heart and the movement of his feet are not in agreement] - are the outward sign of his mental breakdown. Ottone's situation is indeed drastic: he has come to kill Poppea, his own wife.

The very first opera, Cavalieri's *Anima e Corpo*, stars Time as the first character to sing: his power is inescapable. The opera ends with eternal visions of Heaven and Hell. But the next operas feature humanist super-heroes who attempt to overrule the laws of nature. In Peri's and Caccini's *Euridice* (both 1600) and Monteverdi's *Orfeo* (1607), Orpheus descends to Hell to rescue Euridice from the dead. His singing has power to melt the most frozen hearts, even to soften stones. And in Rinuccini's libretto for the two settings of *Euridice*, Orpheus slows down the course of rivers (a metaphor for time), and attempts to persuade his father, Apollo, to speed up the progress of the sun-chariot, plunging it into the sea and hastening his much-desired wedding night. Predictably, disaster follows: his bride is bitten by a snake, and dies.

In real life, musicians flirted with correspondingly risky performance practices. Caccini famously applied to music the renaissance attitude of *sprezzatura*, a elegantly relaxed physical stance seen in many period paintings, and an elaborate air of nonchalance described in Castiglione's *Book of the Courtier* (published in many editions from 1508 onwards). Showing how to perform a song, Caccini responds to suggestive words in the text, '*you wander erratically this way and that*' by singing '*without measure, with the afore-mentioned nonchalance*'.

Monteverdi notates for his *Orfeo* precisely how this *sprezzatura di ritmo* is performed: the continuo accompaniment maintains the measure, but the singer places his notes subtly before or after the beat. We recognise this practice today in jazz, where the soloist's cool rhythm nonchalantly side-steps the regular beat of the accompanying rhythm section.



Monteverdi's notation of *sprezzatura*: the vocal line is elegantly displaced against the measured accompaniment.

In another phrase of his model song, Caccini indicates a change to a slower measure, again in response to an obvious cue from the text: '*I am dying from this*'. For instrumental toccatas, Frescobaldi too asks musicians to 'drive the time', changing the tempo from one passage to another according to the changing passions of the music, or suspending the beat in the air, just for a moment.

Modern performers tend to interpret these practices as equivalent to Romantic Rubato, but there are significant differences. Whilst 20th-century Rubato is all-pervasive, 17th-century changes to tempo are infrequent: only once or twice in a song, and in response to the words (according to Caccini); only between contrasting passages (according to Frescobaldi). Baroque musical time is still philosophically connected to the Harmonies of the Spheres and of the Human Body. The measure of Tactus is always present, even if the singer temporarily ignores or changes it. And any meddling with Time carried cosmic and personal risks – Caccini’s attempt at cool nonchalance is in the face of the text ‘*I am dying from this*’.

In the 18th-century, we see further experiments with Time in the theatre and the concert hall. David Garrick championed a new fashion in acting, suspending Time at moments of the greatest artistic tension in order to strike a dramatic Attitude. This pose would be sustained, sometimes waiting until the audience applauded. Similarly in music, the late baroque cadenza suspends the normal flow of time for soloistic display. The opera singer Farinelli would begin a cadenza by sustaining a long note until the audience applauded, and then continue without a breath into a flurry of scales and trills. Even in the subtle style of chamber-music *Empfindsamkeit* (Sensitivity), C.P.E. Bach (1753) asks musicians to elongate rhetorical silences for greater effect.



David Garrick as Richard III (1745)

In his *Violinschule* (1756), Leopold Mozart, father of Wolfgang Amadeus (who was born the same year), confirmed the cool style of the previous century, in which the soloist plays with nonchalant freedom over a measured accompaniment. Although Mozart emphasises that this should not be overdone, in the next century it became more and more fashionable to play out of time. The great harpist, novelist and pedagogue, Stéphanie Comtesse de Genlis complains bitterly about this (1811): “one might as well play out of tune!”

Timeless melody over a timed accompaniment could be very beautiful: Chopin’s approach to rhythmic freedom followed this, Caccini’s model. But as 19th-century performers adopted the persona of the Romantic Genius, the philosophy of Music and Time inevitably changed. No longer was musical order a divine right; no longer would the Great Performer be subject to the rule of Time: musicians asserted their freedom and expressed their all-powerful emotions with unrestrained Rubato.

Pre-Newtonian Time

One of the many factors that eventually led to this revolution in musical philosophy was Newton's concept of Absolute Time, published in his *Principia* (1687). In spite of Einstein's work on Relativity more than a century ago, and Hawking's *Brief History of Time* (1988), Newton's ideas still underpin most people's concept of Time today. So much so, that it is difficult for us to imagine how differently renaissance man understood pre-Newtonian Time.

According to Newton, Absolute Time ticks on regularly, reliably, independently of the motion of objects. It can therefore be used to measure the movement of stars and planets. Since Time itself continues, whatever we humans do, it is safe for modern musicians to play unrhythmically: Time itself will continue regardless.

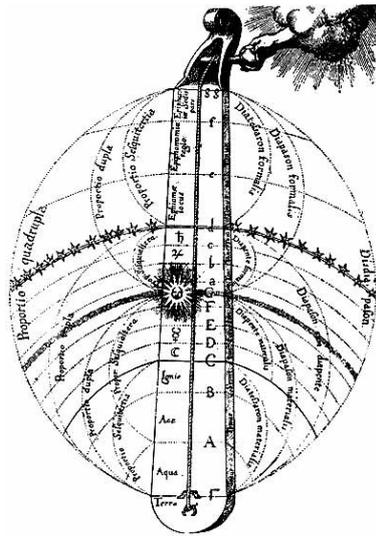
But before Newton's ideas had gained widespread acceptance, the reverse was true. Music measured out Time, as perfectly as human nature could manage it. The perfection of Time was observed in the divine clock of the heavens, the movements of the celestial dance, the rhythm of the Music of the Spheres. Time did not measure astronomical orbits: rather, the heavenly clock was the definition of Time. If the Music of the Spheres faltered, Time itself would break. If the singer's pulse stops, the music also dies.



Nowadays, some musicians might disparage a rhythmically accurate performance as 'mechanical'. But in the 18th century, the cosmos was still admired as a divinely created clock, turning ever-constantly like a perfect machine. Machinery itself, like the beautifully complex mechanism of Marie Antoninette's pedal harp, was the aspirational technology of the day. To play in time was a religious duty (so Ornithoparcus and Dowland thundered at renaissance musicians), and as cool for the baroque period (according to Leopold Mozart and CPE Bach) as the latest smartphone is today.

Whereas today we use satellite technology to tell us where we are, looking at a stylish touch-sensitive screen with its GPS precision, renaissance and baroque musicians listened to the Heavenly Clock, the Music of the Spheres, telling out the sound of Time with elegant artistry and precise style. That Heavenly Music resonated in their own bodies, their heartbeat pulsed in musical Proportion to the slow Tactus of the Spheres. Their realisation of that rhythm in actual, practical music-making was as accurate as humanly possible: their religious salvation and their earthly lives depended on it.

An anonymous treatise on sword-fighting from renaissance Bologna compares a swordsman's timing to a singer's sense of rhythm. As a singing student at a modern conservatoire commented: "we'd all be dead!"



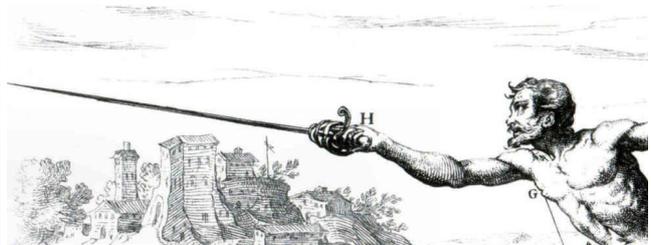
The Harmony of the Spheres governs...



Time



Music



Swordsmanship

Andrew Lawrence-King, June 2013

¹ Rudolf Wittkower *Architectural Principles of the Age of Humanism* cited in John Orrell *The Human Stage: English Theatre Design, 1567-1640* (Cambridge, 1988). The idealisation of the cosmos led period philosophers to insist that planets should have circular orbits, which created difficulties in reconciling their theories with evidence from direct observation.

² *Discorsi e dimostrazioni matematiche, intorno à due nuove scienze*. The two new sciences are the strength of materials and the motion of objects.

³ Dawn Ades *Dali and Surrealism* (London, 1982)