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New Zealand Opera and Italian Myths

This paper examines the myth of Galileo as passed down by historians, literary critics and artists such as the German playwright Bertold Brecht and the Italian movie director Liliana Cavani. The discussion then focuses on the representation of the myth in Witi Ihimaera and John Rimmer's recent production, Galileo Extravaganza. Opera has traditionally had the function of popularising, within its own artistic means, current topics. In this sense, Galileo Extravaganza can be considered a traditional opera. The very current issue of the repression of difference in self-proclaimed democratic societies is brought to the fore in this production. Ihimaera and Rimmer's opera gives an interpretation of one of the most famous and controversial examples of repression of difference that modern history records: the forced recantation of Galileo Galilei. Rather than being a divertissement on an exotic and distant tale, Galileo - the Opera, with the multimedia experience it offers, brings the myth of Galileo into a contemporary frame and thus forces us to think about how we deal with diversity.

Galileo Galilei as a model for the European intellectuals in the era of the Counterreformation

Galilei's contribution to the transformation of knowledge is undeniable: he elaborated his own research methods and modified the concept of science; he spread news of his astronomical theories throughout Italy, created a school of thought and attempted to reshape the relationship between society and scientists by making scientific discourse available to all – not just to the learned[1]. Galilei's biography is representative of a historical condition: it bears witness to the ideological conflicts of his times as well as the complex relationships that existed between the intellectuals, the political powers and the culturally dominant institutions[2].

During the first decades of the 17th century there was such a decisive transformation of knowledge that we tend to call it a "scientific revolution". There were changes in the disciplines' contents, methods and sphere of application (disciplines such as astronomy, physics, mathematics, medicine). Yet the most radical change was not so much the individual discoveries made, but the attitude of intellectuals towards nature, humankind and knowledge itself. Before this transformation, the concept of science was still confused with that of "vision of the world" and covered a generic and very large area. By the end of the revolution, the fields of science were well defined, as were the boundaries dividing the various disciplines. In the study of natural phenomena, the method based on mathematics

and experimental control - which became peculiar to modern science – took hold. However, since following the Council of Trento (1545-1563) there had been a general trend in religious doctrines towards inflexibility and repression of dissent, a strong conflict between scientists and Church authorities became inevitable[3].

Galileo was, together with his students and other scholars, one of the major protagonists of this scientific revolution. The main problem for scientists then was to conquer a research "space" that was autonomous from religious authority. This was particularly difficult for those disciplines concerned with the structure of material reality, the world that is. According to the Aristotelian tradition, which in the Middle Ages was incorporated into Christian theology, these disciplines were part of a general conception of the universe and thus they were considerate inseparable from the metaphysical presuppositions founded on revelation. The new theories, both in physics and astronomy, could only be accepted if the Aristotelian cosmogony was rejected. So in all research into the physical nature of the world, there were the grounds for conflict with the Church[4]. Galileo's trial was one of the clearest examples of these conflicts which resulted in a new concept of science. Galileo was living in the Venetian Republic[5] which was relatively autonomous from the power of the Catholic Church, however he decided to return to Florence and Pisa under the protection of Cosimo de Medici because he believed that he – and thus science – would be better off under the protection of a prince, rather than a republic. He was wrong; however, he was still fighting for his and science's autonomy.

The Congregation of the Index in 1616 suspended, and therefore prohibited, all works which accepted the Copernican heliocentric theory. The Congregation did not think it wise to issue an absolute prohibition because that theory had been well known for 70 years and its calculations had been used to reform the calendar. However ecclesiastic politics made it necessary for the Church to take precautions against the ideological effects of the Copernican doctrine. Both Lutherans and Catholics could not get over the fact that the heliocentric theory contradicted the Holy Writ, especially the Old Testament, where there were explicit references to the immobility of the earth and the movement of the sun around it[6]. Moreover the Catholic Church wanted to save the authority of its interpretative tradition so they found a compromise: they distinguished between (1) a purely mathematical supposition which could be used to explain some phenomena (they used the expression "to save appearances") but whether it was true or false was not important and (2) a theory that presented itself as a true description of things as they are. Copernican doctrine was accepted in the first sense and condemned in the second[7]. Galilei, up until 1615,

maintained that the discoveries of science and the content of the Holy Scriptures were not irreconcilable. They were two truths, but were expressed in different ways: one in the Book of Nature and in the language that only scientists can understand, the other in a fairy tale format for simple people. He also said that the Polish astronomer considered his system as a true representation of the universe and not as a simple supposition, which could also be fictitious[8]. But after Cardinal Bellarmino's distinctions mentioned above, after the censorship of Copernicus's works and after the Holy Office prohibited him in 1616 from supporting in any way Copernicus's theories, Galilei became more cautious. In 1632, when he wrote the preface to his major work, *Dialogue Concerning the Two Chief World Systems*[9], he shows that he has accepted the point of view of Bellarmino because he declares that he is going to treat the Copernican system as a pure mathematical hypothesis, admitting that non-scientific reasons (piety, religion, acknowledgement of divine omnipotence and the weakness of the human mind) might advise that it is better to keep a traditional theory of the immobility of the Earth. But from how the arguments are treated in the dialogue, it is clear that Galilei once again is trying, in an indirect way, to guarantee the autonomy of knowledge: he was distinguishing between science and faith in order to be free to develop scientific reasoning. He presented the heliocentric theory as pure hypothesis, not because he considered it fictitious (this was instead the meaning that the ecclesiastic authorities gave to the concept of hypothesis), but because he viewed all science as nondogmatic research whose task is to arrive via hypothesis at sure conclusions not to absolute truth. It was on the meaning of the word "hypothesis" that Galilei and the ecclesiastic authorities found themselves in disagreement. The attitude of Galilei was certainly ambiguous and clumsy and indeed he was tried and condemned. Historical circumstances, however, didn't allow for solutions that weren't of compromise. Science that was involved in philosophy, in general conceptions of the world, in metaphysics, could not avoid religious control and conflict. The idea of science that Newton proposed at the end of the century was still in tune with Galilei's in concept. The aim of experimental science for Newton was to describe the phenomena and find out their mechanisms. It wasn't to look for the true causes that determine them[10].

For science, there were two audiences: the works in Latin were circulated among a public that was geographically diffused but socially limited: other scholars. The works in the vernacular had a circulation which was geographically limited, but reached a wider and heterogeneous public. Galilei was an exemplary case for this: he was for over 30 years the most prestigious scholar in his field, both in Italy and in Europe. He was recognized as a

master and was at the centre of a huge network of relationships which are documented by an extremely rich epistolary. Among his correspondents are many of the most important intellectuals of the day, from Keppler to Sarpi to Campanella. However, for the reconstruction of the relationships between science and society, it's more interesting to see the characteristics that made up his group of correspondents. We can distinguish two main categories: one is that of his students and followers who became, in their turn, professional scholars; they are all committed not only to scientific collaboration, but also to reciprocal, practical support. Galilei found for each of them a good position in the centres of power, so his ideas penetrated into the university world. Benedetto Castelli taught in Pisa and Rome; Evangelista Torricelli in Rome and Florence. The second category consists of the *intendenti*, the amateur scholars. This is the public to whom the most famous of Galileo's work are directed. These works are not scientific treatises, strictly speaking, but works intended to spread his findings among a socially elevated, but nonprofessional public (examples: the Roman prince Federico Cesi, founder of the Academy of the Lincei, the Venetian patrician Sagredo). Galilei, even if he had many work relationships with artisans, didn't write for them, but wrote for the nobility and the intellectuals because he was convinced that science could develop only if supported by the ruling class[11]. In addition, the language he uses, the vernacular that is, without being specialized is however elegant and literary, and is revealing of his intended audience. In his writings, Galilei wanted not only to explain new scientific theories, but he also wanted to spread and defend them. This is why he was often controversial with both real and fictitious interlocutors and this is why he chose more than once the form of the dialogue for his treatises, a form which allowed him to give his discourse the character of a discussion[12].

Galileo's use of language and his theory on language (such as we can gather from his and his students' works) also aim to affirm the autonomy of science. The radical position taken in the language field by Galileo and his followers can be understood not by comparing their styles to those of other literary authors, but by comparing them with those of the previous "pseudo-scientists", as it were. His most significant and innovative choices were: 1) the adoption of the vernacular even for those theoretical arguments which were usually dealt with in Latin. 2) the creation of the technical, scientific terminology which was missing from the vernacular; to this end, Galilei did not follow the usual practice of coining new learned words derived from Latin or Greek, but he took words from the vulgar language and gave them a specialised, technical meaning. Phenomena and experiments were described using analogies, using facts and objects of everyday life; commonly used words

when introduced in new contexts acquired a technical meaning. This practice founded a very particular linguistic tradition: even today in physics more than in other science commonly used words are largely employed. In these choices (the use of the vernacular and common, everyday words) we can see his conscious decision to use words with a different function from that which they have in the language used by the followers of Aristotle. This is the most important point of Galileo's theory of language**.** For Aristotelians, the names, that is the definitions, had an absolute meaning. One would discuss names, not phenomena. Words were real entities like things and thus they could not be modified easily. Galilei, on the other hand, underlines, with strong controversial liveliness, that scientific language has its own instrumental and conventional function. What matters for him is the phenomenon one is studying, the object of study. Names used to designate it (the phenomenon) can be chosen at will, arbitrarily, as long as they do not generate confusion and are adequate to the object's characteristics. Thus the same battle for the autonomy of science was also fought by Galileo at the level of language[13].

The condemnation of Galileo in 1633 gave intellectuals – both those in Italy and beyond - grave cause for concern. For example, Descartes was about to publish a treatise on physics entitled *The World* in which he accepts the theory that the Earth moves; following news of the condemnation of Galileo, Descartes withheld from publishing the tract. The work was not published until many years after his death in 1664. In November 1633, Descartes wrote a letter to his parisian friend, Marin Mersenne, in which he says that the condemnation of Galileo "…struck me so much that I have almost decided to burn all my papers, or at least not to let anybody see them. For I cannot begin to imagine that he, Italian, and as far as I know an intimate of the Pope, could be incriminated for no other reason than that he asserts that the Earth moves. I must confess that if that statement is false, then the fundamental basis o0f my philosophy is false […] Since nothing in the world would induce me to publish anything in which even one word is disapproved by the Church, I'd prefer to destroy it rather than have it appear changed[14]." In a sense even when he was deciding not to publish his work, Descartes was working towards autonomy of science.

This myth of Galileo, this model for the intellectuals of the era of the Counterreformation, changes radically when artists who belong to different historical periods and are immersed in their own social environments treat it in their works. Before focusing attention on the treatment given to it by Witi Ihimaera and John Rimmers in the Opera *Galileo* recently performed in Auckland, New Zealand, it is worthwhile noticing how the myth has been

dealt with previously by two famous artists, the German playwright Bertold Brecht and the Italian film director Liliana Cavani[15].

Brecht

Bertold Brecht's *Life of Galileo* is one of his most tormented and ambiguous plays[16]. There are three versions of the play. The first two were written during Brecht's exile: the first in Denmark in 1938-39 and the second in the United States in 1945-46. This latter play was staged with very little success in New York 1947. The third version was written between 1953 and 1955 while Brecht was living in East Berlin where he lived from 1948 until his death and where he directed his own theatre company, The Berliner Ensemble[17]. Central to all three versions is the relationship between science, society and power. However the character of Galileo undergoes a profound change: in the first version, the character is closest to the conventional historical depiction of Galileo and the figure, in spite of his recantation, is essentially that of a positive hero. He defends himself from oppression; he fights, he resists. In the successive versions, however, Galileo is portrayed with negative or at least ambiguous characteristics. He is the emblem of the betrayal of scientists and their submission to power. Galileo's story in the last version was influenced by the events of the time and allegorised; the pedagogic intentions of the text are emphasized. Brecht himself gave a political explanation for this change: the atomic explosions with which, in 1945, the war was put to an end induced him to emphasise the responsibility of scientists. As it was appropriate for his "epic" theatre and its theory of estrangement, the German playwright has the same Galileo condemning himself in the 14th scene of his 15 scene play. Certainly the figure of Galileo in the play remains ambiguous exactly because Brechtian theory "will ask us to construct the character of Galileo as a combination of sheer weakness (obsession with ideas on the order of the weaknesses of the flesh, and in particular the lust for food, scientific passion and discovery as gluttony) and the grand pedagogical virtues of the seer or wise man…"[18]. However this ambiguity does not concern the reasons of his self-condemnation. Indeed when Andrea Sarti, one of his previous students who had condemned him for his recantation, finds out that after the trial Galileo, even in captivity, had written his book on mechanics, he takes the stance of appreciating Galileo's sacrifice in the name of science. However Galileo's answer leaves no doubts on the reason why he condemns himself:

> Eine Menschheit, stolpernd in diesem tausendjährigen Perlmutterdunst von Aberglauben und alten Wörtern, zu unwissend, ihre eigenen Kräfte voll zu entfalten, wird nicht fähig sein, die Kräfte der Natur zu entfalten, die ihr enthüllt. Wofür arbeitet ihr? Ich halte dafür, daβ das einzige Ziel

der Wissenschaft darin besteht, die Mühseligkeit der menschlichen Existenz zu erleichtern. Wenn Wissenschaftler, eingeschüchtert durch selbstsüchtige Machthaber, sich damit begnügen, Wissen um des Wissens willen aufzuhäufen, kann die Wissenschaft zum Krüppel gemacht werden, und eure neuen Maschinen mögen nur neue Drangsale bedeuten. Ihr mögt mit der Zeit alles entdecken, was es zu entdecken gibt, und euer Fortschritt wird doch nur ein Fortschreiten von der Menschheit weg sein. Die Kluft zwischen euch und ihr kann eines Tages so groß werden, daß euer Jubelschrei über irgendeine neue Errungenschaft von einem universalen Entsetzensschrei beantwortet werden könnte. – Ich hatte als Wissenschaftler eine einzigartige Möglichkeit. In meiner Zeit erreichte die Astronomie die Marktplätze. Unter diesen ganz besonderen Umständen hätte die Standhaftigkeit eines Mannes große Erschütterungen hervorrufen können. Hätte ich widerstanden, hätten die Naturwissenschaftler etwas wie den hypokratischen Eid der Ärzte entwickeln können, das Gelöbnis, ihr Wissen einzig zum Wohle der Menschheit anzuwenden! Wie es nun steht, ist das Höchste, was man erhoffen kann, ein Geschlecht erfinderischer Zwerge, die für alles gemietet werden können. Ich habe zudem die Überzeugung gewonnen, Sarti, daß ich niemals in wirklicher Gefahr schwebte. Einige Jahre lang war ich ebenso stark wie die Obrigkeit. Und ich überlieferte mein Wissen den Machthabern, es zu gebrauchen, es nicht zu gebrauchen, es zu mißbrauchen, ganz wie es ihren Zwechen diente.(130)

If mankind goes on stumbling in a pearly haze of superstitition and outworn words and remains too ignorant to make full use of its own strength, it will never be able to use the forces of nature which nature has discovered. What end are you scientists working for? To my mind, the only purpose of science is to lighten the toil of human existence. If scientists, brow-beaten by selfish rulers, confine themselves to the accumulation of knowledge for the sake of knowledge, science will be crippled and your new machines will only mean new hardships. Given time, you may well discover everything there is to discover, but your progress will be a progression away from humanity. The gulf between you and humanity may one day be so wide that the response to your exultation about some new achievement will be a universal outcry of “Horror”. As a scientist, I had a unique opportunity. In my time, astronomy reached the marketplace. Under these very special circumstances, one man’s steadfastness might have had tremendous repercussions. If I had held out, scientists might have developed something like the physicians’ Hippocratic oath, the vow to use their knowledge only for the good of mankind. As things stand now, the best we can hope for is a generation of inventive dwarfs who can be hired for any purpose. Furthermore, I have come to the conclusion, Sarti, that I was never in any real danger. For a few years, I was as strong as the authorities. And yet I handed the powerful my knowledge to use, or not to use, or to misuse as served their purposes.(94)

For Brecht and thus for his Galileo, there is no such thing as autonomy of science.

Cavani

Her first film in 1966 focused on Francis of Assisi and his rejection of the world seen as a precursor to juvenile protest at the end of the Sixties. Francis is presented as a determined opposer of power and money, thus his rebellion anticipates the themes that will characterize the 1968 anti authoritarian movement and the Catholic dissent. With a similar lucidity Cavani in *Galileo* dealt with the conflict between consciousness and institution.The movie came out in 1968 [19] – that is, towards the end of a decade which had seen, both in the Western and in the Eastern worlds, a radical rebellion against authority of any kind. Cavani's film follows the life of the scientist from the height of his success as a mathematician to his trial and recantation, emphasising that he had no choice but to act as he did; after all, the alternative was martyrdom. This is why she contrasts him with the philosopher and cleric Giordano Bruno who was burnt at the stake because he openly attacked the Church. For Cavani, in Galileo's days, any form of direct attack on powerful institutions would have been to no avail. Rather than condemning him for selling out, Cavani emphasises Galileo's pragmatism and prudence, as he struggled to find ways to work and survive while operating within the dictates of a rigid, rule-bound Church. She pits Galileo against Giordano Bruno, the latter stridently demanding that the Church accept new science – and suffering a brutal, violent end – the former asking for scientific freedom while understanding that the Church cannot be proven wrong, yielding to the humiliations of his recantation, but at least living to see another day[20].

The myth of Galileo becomes the topic for a contemporary New Zealand chamber opera with music by John Rimmer and libretto by Witi Ihimaera recently performed in Auckland[21]. The authors bring the myth into their own society: the opera *Galileo* is subtitled "a multimedia experience" and indeed makes use of modern technology such as video images projected on a giant screen and electronic sound to complement the live orchestra's accompaniment of the singing. The story might belong to the Renaissance, but the music is predominantly and unmistakably contemporary. The opera is framed within two references to contemporary history - at least to that constructed by the media - events which received worldwide media coverage in 1992. The opera opens with a reference to an

official, contemporary use of the myth of Galileo: the giant screen, which forms part of the backdrop, shows a rocket being launched while a voiceover of a TV newsreader informs the audience that the Galileo probe has passed by Earth's moon on its way to Jupiter and says that Galileo is "the man credited with the beginning of modern history when he challenged Church authorities about how the universe was constructed". The opera closes with a reference to Galileo's rehabilitation by Pope Paul II, again in 1992.

Within these two scenes, there is the representation of the myth of Galileo's life, charting his achievements and his famous recantation. The scenes depict in chronological order some of the more salient events which punctuated the scientist's life. The very choice of these events – and especially the way in which they are described – are of course functional to the image of the myth which the authors want to portray. They present a picture that, while emphasising the scientist's genius, intellectual power, ambition and ethics - all elements which make him a symbol of diversity - at the same time shows his weaknesses, arrogance being the most evident one, and thus portrays a very human and vulnerable hero. The decision to cast Galileo as a baritone adds to the picture of such a hero. Certainly a baritone voice, with its richness and its span from high to low, gave the composer a wider scope to write within than had the hero been a tenor, the voice which is often used heroically in opera. However, the baritone voice endures and therefore lends itself to a discourse based on persistent reasoning, as compared to the tenor voice which uses the pure force and adrenaline of heightened passion to overcome. The tenor voice is a popular choice for the fictional, romantic super-hero; the baritone for historical figures (Mussorgsky's *Boris Godunov,* bass or baritone; Verdi's *Nabucco*. Indeed, this emphasis on Galileo's humanness allows the audience to make their own connections between the stage character and the Galileos in our midst.

The plot is very compressed and the action is effectively organized in an essential structure where all the elements create a suspence which is resolved only in the climax of the final trial scene.

In the first act, we see Galileo using his mathematics to measure the size of Dante's inferno before an academy of learned men and women. While we see his success in this exercise, we also see that the Church already has its eye on him – and with good reason. In fact, to give the exact measurements of the Inferno is to give this supernatural entity a materiality

that certainly was not foreseen by Catholic doctrine. The first act also shows that the scientist has the support and admiration of the learned men and women of the academy.

Once the first act has set the drama in suspence mode, the following three acts develop the climax in a classical chiastic pattern: Act Two is divided into two scenes each of which is a mise-en-abime respectively of Act Four and Act Three. First we have the burning at the stake of a heretic who refuses to recant, a foreshadowing or anticipation of Galileo's trial in Act Four. Then in the second scene there is the representation of Galileo's growing fame as a scientist (he demonstrates his theory of free-fall) and his relationship with both power and the people: the Grand Duchess of Tuscany, Christina, appears as a protector of the scientist against the increasing suspicions of the Church's representatives, while the chorus, representing the people in the street, follows with interest Galileo's progress. All these work as a forewarning of the events to be represented in Act Three.

Act Three, following the interval, indeed develops the theme of the scientist's success, growing ambition as well as arrogance and increasing popular support, all of which embolden him to the point that he confronts the Church head on, refusing to accept the wise advice of his protector, The Grand Duchess, to stop challenging Church doctrine.

In the final act, focused as we have said on Galileo's trial and recantation, all the motifs present in the previous acts are recalled and the suspence resolved: The first scene has a thematic link to the previous Act: the audience is confronted with a Galileo who is still defiant and challenging the Church while he is still under the protection of the Grand Duchess and still has the support of the people as symbolised by a troubador who sings in praise of his astronomical discoveries. However when during the trial he is accused of being the cause of a black plague and his supporters abandon him, he starts to realise that he was wrong to rely on the power of his intellect and the existence of an absolute justice. "I have been so arrogant, so cocksure of myself. I have been a philosopher, discoverer, the greatest man of my time! And now I am brought down! Dio m'assista!" He still defends himself and fights for his ideas until he is forced to recant and he does so. However, Galileo turns to the audience and sings, "Eppure, si muove" ("It still moves") and shows that his recantation is a pragmatic move.

The violence of the institution is strongly emphasised not just by the text and the singing (which sees two tenors, Bellarmino and Castelli, and a bass, the pope, against the baritone Galileo) but also by the images on the giant screen which show depictions of the inquisitorial burning from Act Two as well as modern images of gas chambers at Belsen and Pol Pot atrocities.

The appearance in the last scene of Pope Paul II, who recognizes the Church's error, is followed by the final monologue of Galileo, by now pacified and thus encouraging the public to follow him also in his pacified mode: "I just wanted to measure the unmeasurable, to open Heaven's gate and see the face of God" a cry for humanity's essential need for continual improvement towards the final goal of truth.

This extremely compressed thematic structure is reinforced by both the density of the music and the compactness of the DVD images projected on the screen. The music has a wide range of styles and forms, some of them in sharp contrast. The unifying motif of the whole opera is what Rimmer calls 'the Music of the Heavens', music which is electronically produced using various sophisticated techniques which take into consideration both the words of the libretto and geometric patterns such as Fibonacci's series of natural growth. This music is juxtaposed with the traditional 5th century hymn sung by the Grand Duchess Christina. In contrast to the hymn, the electronic music sounds much freer and this is a contrast that is used for heightening the dramatic contrast of the opera. However, although the electronic music might sound free, most of it is based on a very limited number of notes and very controlled, just as the plainsong is. Similarly, Rimmer strictly links each instrument in the small chamber orchestra to a particular character. So the main character of Galileo, sung by the baritone David Griffith, is represented by the horn; the two tenors, Cardinal Bellarmino and the Inquisitor Castelli are represented respectively by the violin and the oboe; the Pope (a bass) is represented by the cello; the Grand Duchess Christina by the flute and the Angel of God by the clarinet. This tight structure extends to the music associated with each character. Galileo's musical theme is adapted to form parts of the other characters' themes, and thereby forms the core around which the other characters revolve.

The myth portrayed in this opera is certainly closer to that transmitted to us by Liliana Cavani than to the Brechtian one. Rather than having the symbol of the intellectual who

has sold out to power, we have a human figure of an intellectual who in spite of his weaknesses - or perhaps because of them – can be a role model even in his pragmatism to all those who are ready to fight in defence of their own beliefs.

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E N D N O T E S

[1] For this discussion of Galilei we have used concepts and suggestions found in Remo Ceserani and Lidia De Federicis, *Il Materiale E L'immaginario. Laboratorio Di Analisi Dei Testi E Di Lavoro Critico*, vol. V. La società dell'antico regime (Torino: Loescher, 1980) 259-340.

[2] For Galilei's biography see Antonio Banfi, *Vita Di Galileo* (Milano: Feltrinelli, 1962).
Gaetano Cozzi, *Paolo Sarpi Tra Venezie E L'europa* (Torino: Einuadi, 1979).
James Reston, Jr., *Galileo : A Life* (New York: Harper Collins Publishers, 1994).

[3] Paolo Rossi, *Aspetti Della Rivoluzione Scientifica* (Napoli: Morano, 1972).

[4] Paolo Rossi, *Il Pensiero Di Galileo Galilei* (Torino: Loescher, 1975).

[5] The relationship between Galilei and the Venetian Republic is discussed in great detail in Cozzi, *Paolo Sarpi Tra Venezie E L'europa*.

[6] Maurice A. Finocchiaro, *The Galileo Affair : A Documentary History*, *California Studies in the History of Science ; 1* (Berkeley: University of California, 1989).

[7] For a brief overview of this theory see the letter by Cardinal Roberto Bellarmino, dated 12 April 1615, to the Carmelitan Paolo Antonio Foscarini, a scholar who attempted to reconcile the Copernican theories with the Holy Scriptures, in Galileo Galilei, *Opere*, ed. A. Favaro, Edizione nazionale ed., vol. XII (Firenze: Barbera, 1890-1909; reprint, 1968) 171-72.

[8] This stance is especially evident in the letter dated 21 December 1613 from Galilei to Benedetto Castelli, a Benedectine Father who taught mathematics in Pisa, *ivi,* vol. V, 282-284. The distinction between two truths is also sustained in another two letters dated 1615, one to Monsinior Piero Dini (16 Februrary) and the other, a very long one, to the Grand Duchess Crisina of Loren. They can be read in Galileo Galilei, *Opere*, ed. Ferdinando Flora (Milano, Napoli: Ricciardi, 1953).

[9] Galileo Galilei, *Dialogo Sopra I Due Massimi Sistemi Del Mondo, Tolemaico E Copernicano*, ed. Libero Sosio (Torino: Einaudi, 1970).or in English Galileo Galilei, *Dialogue Concerning the Two Chief World Systems, Ptolemaic & Copernican*, 2nd ed. (Berkeley,: University of California Press, 1967).

[10]Alberto Asor Rosa, *Galilei E La Nuova Scienza* (Bari: Laterza, 1974).
Harvard Project Physics., *The Project Physics Course* (New York: Holt Rinehart and Winston, 1975).
Guido Morpurgo Tagliabue, *I Processi Di Galileo E L'epistemologia* (Milano: Comunità, 1963).

[11] Maria Luisa Altieri Biagi, *L'avventura Della Mente: Studi Sulla Lingua Scientifica* (Napoli: Morano, 1990).
Andrea Battistini and Ezio Raimondi, *Le Figure Della Retorica: Una Storia Letteraria Italiana* (Torino: Einaudi, 1990).

[12] Andrea Battistini, "Gli 'Aculei' Ironici Della Lingua Di Galileo," *Lettere italiane* 3 (1978).

[13] Roberto De Maio, *Riforme E Miti Nella Chiesa Del Cinquecento* (Napoli: Guida, 1973).

[14] This letter can be read in the original French in Galilei, *Opere* 171-72.

[15] The cinematic adaptation of Brecht's *Galileo* directed by Joseph Losey (UK 1973, 35mm, color, 145 min.) will not be considered here because it is a precise rendering of the play. Before he left Hollywood to escape the blacklist of the House Committee on Un-American Activities, which had prompted Brecht's hasty return to Germany, Losey had in fact directed the Broadway premiere of Bertolt Brecht's *Galileo* — in 1947, starring Charles Laughton.

[16] This can be read in the original in Bertolt Brecht, H. F. Brookes, and C. E. Fraenkel, *Leben Des Galilei*, 2nd ed., *Heinemann German Texts* (London: Heinemann, 1981). or in English translation in Bertolt Brecht, John Willett, and Ralph Manheim, *Life of Galileo ; Mother Courage and Her Children*, *Methuen World Classics* (London: Methuen, 1995). Citations in this paper are taken from these two editions and are followed by the page number only.

[17] A detailed and precise history of the composition of this play can be found in the *Introduction* by Cesare Cases to Bertolt Brecht, *I Capolavori Di Bertold Brecht* (Torino: Einaudi, 1976).

[18] Fredric Jameson, *Brecht and Method* (London ; New York: Verso, 1998) 82.

[19] Script by Liliana Cavani and Tullio Pinelli (Italy, RAI Producer, 94 min.)

[20] Good discussions on the film can be found in AAVV, "Il Cinema Di Liliana Cavani" (paper presented at the Il cinema di Liliana Cavani, Carpi, Italy, 1993 1990).
Gaetana Marrone-Puglia, *The Gaze and the Labyrinth: The Cinema of Liliana Cavani* (Princeton: Princeton University Press, 1999).
L Quartermaine, "Liliana Cavani's Galileo," in *Heretic Voices: Galileo Galilei*, ed. T. Pelegrinis (Athens: University of Athens, 1995).

[21] Maidment Theatre, University of Auckland, April 10-13, 2002.