Le parole delle Muse. La formazione del lessico tecnico musicale nella Grecia antica by Eleonora Rocconi

Reviewed by
Angelo Meriani
Università di Salerno
a.meriani@unisa.it

It is well known that in ancient Greece the term μουσική (*scil.* τέχνη) was used to designate the art of tightly interweaving into each other two or three different activities in a single communicative event, namely, the performance of (nearly all) the poetic texts in singing or recitation, the sound of musical instruments (winds, strings, percussions), and the rhythmic movements of the performers' bodies (i.e., dance). For several reasons, only a small group of scores and fragments of scores of ancient Greek music has come down to us: the evidence is too scanty to show us exactly how ancient Greek music sounded—and this is the case for many other activities of human life in Antiquity. Moreover, the sound itself was only one of three elements of which the μουσική consisted. Still, a large number of ancient literary texts and pictorial images on pottery testify that μουσική permeated the daily life of the Greeks. And since musicologists should seek to examine and understand the ways through which music, in its entirety, appears and develops within specific historical contexts, for ancient Greece we are forced to study carefully, in addition to (and perhaps more than) the few surviving scores and fragments of scores, the images that reflect the diverse and complex manifestations and practices of μουσική, along with literary texts that explicitly deal with or allude to music at different levels (acoustics, the psychology of auditory perception, music theory, the influences of music on the human soul and behavior, and so forth). This is why, in recent decades, studies of μουσική have notably proliferated: the topic continues to generate interest among increasingly large and diverse

categories of scholars—philologists, archaeologists, ancient historians, musicologists, and ethnomusicologists.[1]

It follows that, if the study of μουσική can give us a privileged perspective on Greek culture and civilization as a whole, one of the most effective keys for unlocking the world of μουσική would be to know the technical terminology of this art, to say nothing of the fact that the technical vocabulary of music in most modern languages is strongly indebted to the ancient Greek one. In fact, such technical terms as 'symphony', 'diapason', 'harmony', 'melody', 'rhythm' were also technical terms in ancient Greek, though in coming into the technical vocabularies of modern languages they changed their original meanings, sometimes alot. Only a few scholars have addressed this important topic. Maarit Kaimio, in her lexicological study on the verbal characterizations of sound in literary texts before 400 BC, gives us a 'short survey of the characterization given to sound in such contexts where the sound itself is the object of research' [1977, 218] on the basis of a limited selection of texts, and without any programmatic intention to pinpoint the connections between the characterizations of sound in non-technical literature and the technical terminology known to us from the ancient Greek treatises on musical theory. Solon Michaelides' book [1978] serves both as an encyclopedia and as lexicographical resource: as a reference or dictionary-like work, it gives profiles of musicians, theoreticians, and philosophers who deal with music, along with explanations of a wide if not complete range of technical terms alphabetically arranged. Otto Christoph Steinmayer's doctoral dissertation [1985] gives a lexicological contribution to the story of selected technical terms, a useful but limited picture. None of these works aims to investigate systematically the *formation* of the technical vocabulary of music, as Eleonora Rocconi does in this very welcome book which results from a rewriting of her own doctoral dissertation. The book is targeted primarily at an audience of scholars (classicists, musicologists, and linguists interested in the formation of technical vocabularies), but advanced students in these subjects may also read it with profit.

The topic addressed is vast and difficult, and Rocconi has identified a number of pathways along which technical musical vocabulary has been formed (we shall illustrate them further in this review). In

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[1] See, for example, Raffa 2005 on Murray and Wilson 2004.

so doing, Rocconi has given scholars a new, clear, and reliable start-
ing point. Another reason why every classicist should be grateful to
her is that she has collected and discussed a considerable range of
material on the topic. As M. L. West has recognized [2005], one of
the unquestionable strengths of the book in comparison to previous
works and in proportion to its small size, is the enormous wealth
of material brought to the attention of scholars. In 98 pages of
text and footnotes, Rocconi quotes or cites an impressive number
of texts, spanning the chronological range from Homer to Manuel
Bryennius (14th century AD)—the index of passages mentioned oc-
cupies 17 pages. All texts quoted by Rocconi are translated into
Italian, but only for some of them is the original Greek given as well.
Though this will be a welcome aid to students without Greek, it may
disappoint some classicists.

The central idea of the book is the belief, previously expressed
by Rocconi in an article [1999, 93–94], that the musical vocabulary
of ancient Greece was formed mainly when musical practice became
the object of theoretical reflection, that is, around the same time that
specialized musicological treatises began to be written. In the field
of Greek music theory, the earliest author of whose works a substan-
tial amount survives is Aristoxenus of Tarentum (fourth century BC).
However, not only from Aristoxenus himself, but also from a number
of other ancient authors (Plato, Aristotle, Theophrastus, Ptolemy,
Porphyry) we learn that music theorists of different theoretical ori-
entations did exist before him. Thus, Rocconi turns her attention to
the age preceding Aristoxenus when the process must have started.
The most important authors here were Lasus of Hermione (sixth cen-
tury BC), who, as we are told, was the first to write a real treatise
on music; Archytas of Tarentum; Philolaus of Croton; and Damon of
Oa (fifth century BC). The remains of their writings are so meagre,
however, that we cannot fully evaluate their contributions to the for-
mation of musical vocabulary at this stage of its development.[2] That
is why Rocconi has extended her study to the texts of different lit-
erary genres (prose and poetry) where we find several references to
sound and music which, while not technical in the strict sense, give

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[2] On Philolaus and Archytas, see Huffman 1993 and 2005; on ancient Greek
music theory, see now Barker 2007; on other aspects of ancient Greek musical
terminology, see also Rocconi 2003a and 2004.

us very important pointers to the processes by which some words were given an increasingly technical meaning.

In the introduction [1–10], Rocconi clearly outlines the general plan of her work. She states that the vocabulary of music was heavily influenced by such other disciplines as philosophy and rhetoric, and that the process of its development must have occurred in three ways:

1. the meanings of some words used in the jargon of stringed instrumentalists were extended to embrace technical concepts, musical events, and phenomena in a broader sense;
2. a number of words (mostly adjectives) originally used in common parlance or in poetic language to describe sounds and often derived from other sensory spheres became technical terms in μουσική through metaphor and 'synaesthetic' association;
3. a few onomatopoeic words originating in the representations of sounds made by animals were eventually adopted as technical musical terms.

Consequently, the book is divided into three chapters, each of them dealing with one of the three processes described.[3] A large bibliography [99–107], a detailed index of passages [109–125] and a very useful glossary [127–147] conclude the book.

In discussing the ancient texts, Rocconi does not always follow chronological order and sometimes, even when it would have been possible, fails to identify precisely the moment in the history of language at which a particular word of the everyday language became a technical term in a strict sense. Moreover, many important texts, which could have been usefully discussed in detail, are only mentioned in the footnotes, thus leaving the reader on occasion to struggle to follow the thread of the argument and to integrate several steps that are not immediately evident.

The task Rocconi has set herself involves some specific difficulties and she seems to have made a few general assumptions which I

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[3] That is:

      I. *La lingua degli strumenti: il lessico tecnico dei cordofoni* [11–51]

     II. *Percezione acustica e descrizione metaforica del suono presso i Greci* [53–80]

    III. *Suoni animali e suoni musicali: gli epiteti onomatopeici e la formazione del lessico tecnico* [81–98].

should like to explain here briefly. The first concerns what counts as 'technical vocabulary'. If we represented the vocabulary of a given language by means of the set of its words, a technical vocabulary of that language would be a subset within it, a subset built up from words referring to a particular sphere of human activity of a specialized character. In this way, there would be technical vocabularies for medicine, nautical matters, cooking, music, and so forth. But when exactly should we say that a given word is an item in that technical subset of words? That is to say, what exactly is a technical term? While words in everyday language usually have more than one meaning (polysemy), a word of technical vocabulary should have only one meaning or very few, and this meaning must be defined as precisely as possible so as to avoid, or at least to minimize, misunderstanding and misinterpretation. Such a word should do no more than designate a specific referent (object, action, phenomenon) or a very small number of such referents that fall within the domain of a definite activity. That is to say that technical terminology has one linguistic function only, the cognitive-denotative one. A word of this kind is what we define as a 'technical term' (both 'technical vocabulary' and 'technical term' being of course technical terms in linguistics!).

Although every technical vocabulary consists of words falling outside common language, it also includes words that belong to it; these last, when used in a technical sense, take a different, specific meaning. Generally, there are three main ways by which any technical vocabulary is formed, each leading to a group of technical terms:

- the use of loanwords from other languages ('external' route);
- the development of neologisms using existing word material and following the normal processes of word formation (composition, prefixation, suffixation) ('internal' route); and
- the assignment of new meanings to words that already exist in the common language (or within a technical vocabulary or jargon already established): such words are applied in the new technical area by extension (metonymy) or semantic transfer (metaphor) (another 'internal' route).

We can be sure that a common word has become a technical term in a given area when its functional capacity is reduced and its referential field has been restricted so that its technical meaning is unrecognizable in the semantic sphere to which it originally belonged.

Now, it is quite clear that the vocabulary set of a language no longer spoken, like ancient Greek, is virtually a finite set, and that, within that set, each technical vocabulary subset will also be finite. Quantitatively speaking, then, ancient Greek technical languages include a very limited number of terms when compared to their counterparts among the languages still spoken. This fact, however, regarding the technical vocabulary of ancient Greek music, does not always help us. Despite the limited number of entries to consider, the evidence that we have—a number of texts heterogeneous in content, form, and destination, which range over a very broad time span, thus making them sometimes very difficult to interpret—does not always allow us to trace the history of all the words related to sound and music, and to follow all the steps of formation of each technical term. In many cases, even when the evidence is extensive, it is not sufficient to confirm hypotheses or even to warrant proposing them. Hence, it is not always possible to pinpoint when a word referring to a sound is actually a technical term in the strict sense. Furthermore, we must be aware that a technical musical term derived from common language may continue to be applied to sound events in quite a generic and non-technical sense long after its has become technical, and that this may also occur in technical literature in the strict sense or in contexts that we could call technical. Lionel Pearson drew attention to the difficulties that can arise sometimes when we try 'to distinguish the special or technical use of a word from its general meaning' in such a technical writer as Aristoxenus of Tarentum [1990, xxxiv n20]. Yet, in spite of these difficulties, it is still important to try to restrict the boundaries of our uncertainties whenever this is possible.

But there is a deeper difficulty. In the vast range of the perceptional experiences that human beings are capable of, sound and music are perhaps the most difficult ones to force through the needle's eye of language. As a result, every language—ancient Greek is no exception—has almost no words, if it has any, which are primarily used to describe sound or are specifically related to the sphere of auditory sensations, both sound and the perceptions of it being of course the raw materials of music. If merely studying the processes of the verbalization of sound in ancient Greek (even without taking the next step, namely, the study of the formation of a specific technical vocabulary of music) requires thorough knowledge in linguistics (including semantics and the history of language) and musicology (including

the conceptions that the ancients had of sound (acoustics) and of its perception (psycho-acoustics)), these two sets of skills are not always coupled to the same extent in the person of one scholar. Still, studying the vocabulary of sound and music and paying attention to its strictly technical aspects can help us to expand our knowledge of the ways in which the ancient Greeks conceived sound and music.

Rocconi [6] rightly points out that, within the technical vocabulary of ancient Greek music, the group of loanwords (type 1) is limited to names of musical instruments (except πηκτίς), a subject which Rocconi decides not to address. Many terms are formed by composition, suffixation, prefixation (type 2). But the majority of musical technical terms derive from common language through sometimes very complex processes of metaphor and metonymy (type 3) that bear witness to the evolution of meanings and the ways in which Greek culture conceived music and represented it in language. Moreover, some of the most important semantemes (e.g., the -τονος and -χορδος terminations) employed for the creation of compounds (e.g., ὀξύτονος, τετράχορδος) were formed precisely within this terminological framework. Rocconi's study is dedicated to this group of terms. Consequently, the terms considered, being formed by composition, suffixation, prefixation, are not isolated in accordance with purely morphological criteria but are instead analyzed and examined within her general discussion. Almost all terms are listed in the final glossary [127–147],[4] which includes references to passages of the book in which each term is discussed and thus also serves the functions of an index.

The book is very stimulating and every page deserves attention. An analytical discussion of all material supplied by Rocconi would, however, go far beyond the tasks of a review. Accordingly, I will just follow her argument, adding some of my personal observations and occasionally registering disagreement with her interpretations.[5]

In the first chapter, Rocconi shows that an important part of the technical vocabulary of ancient Greek music consists mainly of nouns

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[4] As far as I can see, a very few items are missing: ἀνάδοσις [15], βραχύς [7n424], ἔντονος [18], στενάχω [55], and ἀκαριαῖος [69].

[5] Unfortunately, the book also contains a large number of typographical errors. See page 125 below for a list of those that are most obstructive and likely to lead to misunderstandings.

and verbs originally belonging to the jargon used by musicians to describe the gestures made in their work, especially in playing stringed instruments (which traditionally enjoyed greater cultural status than wind or percussion instruments) [11]. Moreover, it was in this 'pragmatic' context that musical theory incorporated the names of the musical notes into its technical vocabulary; every musical treatise employed these names to identify musical sounds regardless of how they were produced. Indeed, the names of the musical notes originally designated the strings on stringed instruments: almost all of them (νήτη, παρανήτη, τρίτη, παραμέση, μέση, παρυπάτη, ὑπάτη) originate from the position of the strings on the instrument that produced them [11–12]; only the intermediate note between the μέση and παρυπάτη was designated by the term λίχανος/λιχανός (forefinger), because of course it was originally produced by the string plucked with that finger. Within this group of terms, Rocconi introduces a very important distinction between those recruited into the vocabulary of musical theory and those that remained in the jargon of instrumentalists (string players) to describe precise technical gestures intended to produce special effects of sound.[6]

Rocconi rightly says in the introduction [2] that the oldest lemma (and also the richest in meaning) to have developed in this area is most certainly the word ἁρμονία, whose original meaning, 'conjunction' or 'seam' between different parts, pertains to the sphere of carpentry and comes in music to designate the 'connection (*scil.* of sounds)' or the 'tuning (*scil.* of an instrument)'. The long history of the term is sketched briefly but very clearly [2–3].[7] In particular, Rocconi shows that notions related to μέλος, ῥυθμός, and ἦθος live together with the original musical meaning of ἁρμονία, for the term was used to indicate traditional systems of musical sounds characterized by a set of rhythmic and melodic features that gave them a peculiar ethical influence. Moreover, it was precisely the development of theoretical speculation that caused the word's broad sense to become obsolete: the theoreticians needed to distinguish clearly between the many elements forming the ancient concept of ἁρμονία,

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[6] See, e.g., διάληψις [6] (the practice of placing a finger on the central part of the string and then lifting it off as soon as the plectrum made it vibrate so as to produce the harmonic the next octave up) and κατάληψις [3] (the technique used to suddenly dampen the vibrations of the string being struck).

[7] To the bibliography quoted by Rocconi in 213n8, add Meyer 1932.

which was too rich in different meanings, and to find a single word for each of them. Other terms were introduced into the technical vocabulary of music from the fourth century BC onwards to designate each of the various meanings inherent in the concept of ἁρμονία:

- ○ σύστημα, which covers the 'disposition of sounds within the octave'; this term appears for the first time, as far as we know, in Plato, *Philebus* 17d and reflects the idea of a 'spatial' organization of musical sounds elaborated by the theorists preceding Aristoxenus [76n461];
- ○ γένος, a clearly Aristotelian term which became the technical denomination for particular dispositions of sounds within specific tetrachordal frameworks (in expressions like, for example, γένος χρωματικόν); and
- ○ τάσις, a word from the pragmatic jargon of instrumentalists that came to indicate the pitch of a sound or of a scale.

From Rocconi's account it emerges that the term ἁρμονία never disappeared completely from theoretical literature but acquired new specialized meanings to indicate referents other than the original ones. In Pythagorean parlance, for example, it came to indicate the octave (for which the expression τὸ διὰ πασῶν was also used), while in Aristoxenus' writings it indicates the enharmonic γένος [see 2n8, 3n13]. On the other hand, Platonic and Pythagorean philosophical literature extended the semantic value of ἁρμονία with the result that its technical musical meaning faded.

Rocconi divides the chapter into four sections:

-    I. 'Il lessico della *tensione* e dell'*allentamento*: ἐπιτείνω/ἀνίημι' [13–21],
-   II. 'Il suono come *risultato* della tensione: τόνος e τάσις' [21–26],
- III. 'Il *pizzicamento* delle corde con le dita: ψάλλω e i suoi derivati' [26–32], and
-   IV. 'La *percussione* delle corde con il plettro: il campo semantico di κρούω' [32–51].

The reasons for this division derive from data which are quite obvious to the specialist reader. But since Rocconi takes them for granted, it will be useful to provide here an explanation for the non-specialist. On stringed instruments, sound is produced by the vibration of strings under tension: at a given length and thickness, the higher the tension applied to the strings, the higher the pitch of the

sounds that they produce, and *vice versa*—the lower the tension, the lower the pitch of the sounds. It is also important to consider that in order to produce sound on a stringed instrument, the strings may be set to vibrate either by plucking them with fingers or by striking them with a plectrum. Indeed, several technical terms (e.g., κροῦμα and ψαλμός) derive from the percussing and plucking of strings. Of course, it is also true that at a given thickness and tension, the shorter the string, the higher the pitch; and that, conversely, the longer the string, the lower the pitch of the sound produced by it. Nonetheless, while there are many words referring to the tightening and slackening of strings that became technical terms defining the pitch of all instrumental and vocal sounds, there are none referring to their length. The reasons are probably to be found in the fact that instruments with strings of equal length (e.g., the φόρμιγξ, λύρα, κιθάρα, and βάρβιτος) were, apparently, far more common than those with strings of unequal length (e.g., the πηκτίς and τρίγονον). Furthermore, the designation of stringed instruments as ἐντατά or κατατεινόμενα ὄργανα shows clearly that tension was the important factor.[8]

It is by semantic extension (metonymy) that words from the 'pragmatic' area are employed within the technical vocabulary. Thus, words originally designating specific actions (e.g., the tightening and slackening, percussing, and plucking of strings), came to designate, first, the consequences that those actions have on the sound produced by those instruments and, second, specific facts and technical phenomena within the broad spectrum of musical practice (vocal and instrumental) which have traits in common with those to which they originally relate but are no longer linked to specific referents of that area. This latter would include raising or lowering the pitch of *all* sounds (not just those produced by stringed instruments) or the production of sound by wind instruments or even by the voice. In other words, since at a given length and thickness *a string* producing a high pitched sound is 'tauter' than that producing a low pitched one, and *a string* producing a low pitched sound is 'slacker' than that producing

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[8] See, for example, Aristoxenus fr. 95 in Wehrli 1967, 34; Aristides Qunitilianus, *De mus.* 2.16 [Winnington-Ingram 1963, 85.8]. In general, on stringed instruments in ancient Greece, see West 1992, 48–80 and Maas and Snyder 1989.

a high pitched one, it was said quite naturally perhaps that the relevant sounds are 'taut' and 'slack' respectively. In contrast, it would be less natural, if at all, to say that a sound produced by *a wind instrument* or by *human voice* is 'taut' or 'slack' in itself, meaning that it is 'high pitched' or 'low pitched'. The extended meanings of these words were common at least from Aristoxenus on, but the pathway that led them to be employed in such a way must have had different steps, to judge from some terminological distinctions that we find in Aristoxenus himself [*Harm. elem.* 1.10.24–11.1 ~Da Rios 1954, 15.14–21]. In any case, Rocconi conjectures plausibly that, at a first stage, the spontaneous and, to some extent, rough employment of a purely 'pragmatic' vocabulary might have generated some conceptual inaccuracies within the technical literature itself: in the passage referred to above, Aristoxenus, in opposition to (or in polemic against) many people (οἱ πολλοί) who believed that ἐπίτασις and ὀξύτης were the same thing and likewise that ἄνεσις and βαρύτης were so too, applies an 'Aristotelian' distinction between causes and effects in specifying that ἐπίτασις *produces* ὀξύτης, and ἄνεσις *produces* βαρύτης. So, we should assume that he had in mind his predecessors (or contemporaries) who were engaging in the same field of musical theory, and were using such a terminology a little bit incorrectly—in fact, we can recognize traces of this kind of technical development in Plato.

Indeed, Rocconi [15–16, 23] correctly notes that in some cases [e.g., ps.-Aristotle, *De aud.* 802a5 ff., 803a23 ff.] words denoting tightening and slackening are applied to sounds without any clear reference to their pitch, but to volume or duration in time or other parameters too. Moreover, in ps.-Aristotle *Physiogn.* 806b26 [15], the participles ἐπιτεινομένη and ἀνειμένη do not in any way refer to high and low pitch respectively, but to higher and lower intensity of sound. It is very interesting to consider the series of passages alluding to the 'tones' of the voice, meaning the *volume* of the sounds uttered or the utterer's *emotional intention* as well as the sounds' *pitch* [23nn55–57]. In this regard, if I understand Rocconi's point, I would not be so sure as she is that the musical meanings of verbs like ἐπιτείνω and ἀνίημι are to be connected to the 'natura musicale dell' accento greco' [15]. Rocconi also quotes a series of texts spanning a chronological range from Aeschylus to Plutarch, in which words referring to 'tightening' are applied to the *duration* of sounds in time. I would try to explain this phenomenon by recalling, in addition to what Rocconi says, that

the root ταυυ-, from which the semantic sphere of τείνω derives, orig-
inally contains the idea of 'extension' or 'prolongation', an idea that
could be, of course, applied also to duration in time.[9] Given the texts
adduced by Rocconi, the reader might note that occurrences of this
kind always refer to sounds uttered by voice or produced by wind
instruments such as the σαλπίγξ [Plutarch, *Sull.* 7.6], never to those
produced by stringed instruments. It seems to me that this is eas-
ily explained: sounds produced by stringed instruments (by means
of plucking or percussing the strings) can in no way be sustained;
whereas, in contrast, sounds produced by a wind instrument can be
sustained and even increased in volume—which makes their duration
in time still more evident.

     Obviously, in all these cases of evident polysemy, we should not
speak of technical terminology strictly but rather of a particular influ-
ence of the ways in which ancient Greeks conceived and linguistically
represented a physical phenomenon like sound. According to the writ-
ten evidence that we have of the earliest phases of the history of Greek
language, it seems that no clear lexical distinction between different
characters of sound was made. At the same time, no clear distinction
was made between the sound itself and the perception of it.

     According to Rocconi [14–15], these technical terms never lose
their link to the semantic sphere of provenance; yet, she provides a
number of texts [30–32] where verbs like κρούω and the synonym
κρέκω ('strike') or ψάλλω 'pluck', which both refer originally to two
different ways of producing sound on stringed instruments, pass into
the vocabulary of both the αὐλός (a wind instrument) and the singing
voice respectively. Now, I would take these cases as evidence that
the link, if not broken, has faded. As far as we know, it is difficult to
pinpoint the moment in the history of Greek language when exactly
the link with the technical jargon breaks, and in many cases we only
are able to record statements where the link has already broken. In
this respect, the same passage of Aristoxenus [*Harm. elem.* 1.10.24–
11.1 ~Da Rios 1954, 15.14–21] that Rocconi quotes for other purposes
should be considered an important piece of evidence in this regard.
In this passage, we are told that

> tension (ἐπίτασις) is the continuous movement of the voice
> from a lower position to a higher (κίνησις τῆς φωνῆς συνεχὴς

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[9] See Chantraine 1999, *s.v.* τάνυμαι.

ἐκ βαρυτέρου τόπου εἰς ὀξύτερον), relaxation (ἄνεσις) that from a higher to a lower (ἐξ ὀξυτέρου τόπου εἰς βαρύτερον). Height of pitch (ὀξύτης) is the result of tension, depth (βαρύτης) is the result of relaxation.

What is remarkable here is that tension and relaxation are referred to, in a strictly technical sense, as movements of the *voice* (φωνή) and not as actions exerted on *vibrating strings*. Moreover, the notions of 'movement (κίνησις)' and of 'position (τόπος)' clearly imply the idealization and visualization of a 'sound space'; and it is obvious that the adjectives ὀξύς and βάρυς, referring to high and low pitch of sound respectively, already has a precise technical value. Thus, Rocconi should perhaps have noted that the technical development of these originally 'pragmatic' words implies in turn the pre-existence of a special vocabulary related to qualifications of *pitch*. Anyway, even after a word of common language or jargon has become a technical term of music, it is always possible to find occurrences of its common meaning still in reference to sound—and this may occur even in technical literature, as, for example, in both passages of the *De audibilibus* [802a5 ff., 803a23 ff.] mentioned above. Such ambiguous usage is one of the many difficulties encountered in ancient Greek musical lexicology.

Rocconi draws attention to the fact that this lexical sphere is used also by Pythagorean theoreticians who studied acoustic phenomena without considering the *tension* of the strings producing sounds as the relevant factor for variations in pitch, but taking into account their *length* only. In this sense, the *Sectio canonis*, a treatise attributed to Euclid and dating to around 300 BC [see Barker 1989, 190], has a special importance (even though its author is not a Pythagorean). For, although the author is particularly concerned with the study of ratios between the different pitches of the sounds and the different lengths of the vibrating strings producing them, the vocabulary applied throughout to designate any variations in a sound's pitch consists of terms originally related to *tightening* and *slackening*. However, in this case too, it seems that Rocconi is inclined to see the persistence of some 'active' link between these terms and their original semantic field [14], and to believe that certain evidence that this link has definitively disappeared does not come until the authors of the *Anonyma Bellermanniana* (first few centuries AD) or even Manuel Bryennius (14th century AD) [15]. However, in

my view, the fact that, in order to refer to variations of pitch—a
phenomenon which they consider dependent on the strings' *length*—
Pythagorean theoreticians regularly employed terms originally in-
tended to define the *tension* of strings without any actual reference
to particular actions made upon strings of musical instruments or
the like, does not mean that they really felt a sort of 'active' link
between those terms and the semantic field which they came from.
Rather, it means in all likelihood only that they appropriated tech-
nical terms which had already come into use as such, without any
awareness at all of their semantic origin. Moreover, on the basis of
the evidence provided by Rocconi herself [see 14n52], it is easy to
see how this technical development is a *fait accompli* in later authors
like Cleonides (probably second/third century AD), and of course
Nicomachus of Gerasa (first century AD) as well as Claudius Ptole-
maeus (second century AD), in whose works verbs like ἀνίημι, ἐκλύω
and ἐντείνω appear in theoretical contexts to designate the lowering
of pitch without any reference to the instrument that produces the
sound. Nonetheless, in these cases too, Rocconi believes that those
verbs, in these very contexts, imply a link to their pragmatic origin
[14].[10] My reading of these texts is different from Rocconi's: as it
seems to me, they do not testify to the persistence of that link but to
the fact that those verbs have developed their meaning in a strictly
technical sense.

Rocconi observes that this pragmatic section of musical termi-
nology is also employed in the fields of ethics and political theory
[19n69, 70]; thus, we find it in a corpus of texts defining what Abert
[1899] called 'Ethoslehre'. Here, as Rocconi notes [16ff.], the em-
ployment of these same terms is clearly based on observation of the
influences exerted by different kinds of music on the soul or behavior
of the listeners, and on the ancient assumption that music could af-
fect the human soul in a recognizable way. In particular, since it was
believed that music acts at a physical level, it was supposed to cause
tension or relaxation on the tendons and nerves of the human body
and, thus, that these physiological conditions could determine at the
psychological level corresponding emotional conditions and specific
forms of behavior [4]. What is especially remarkable is that those
forms of behavior were classified and referred to using exactly the

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[10] For the meaning of ἔκλυσις, see De Simone 2004.

same categories and the same words that were technically applied to
their proximate causes, the ἁρμονίαι, as well as to the musical tension
and the slackening of the strings of musical instruments enabling the
production of these ἁρμονίαι. In this connection, Rocconi states [17]
that the capacity possessed by music of a particular type to make a
listener 'tense' or 'relaxed' could be explained by taking into account
physical rather than linguistic (metaphorical) factors, and shows that
in Plato's hands this metaphorical terminology serves as a tool to de-
velop 'principi metafisici ben più significativi' [20]. Indeed, we should
still say that we are in the presence of *metaphors* by means of which
physical and musical meanings are transferred to areas so far apart
as the physiological, the psychological, and the behavioral. Indeed,
it is precisely this extraordinary extension of meaning that impresses
modern readers. For example, it is interesting to follow the semantic
development of adjectives like χαλαρός, μαλακός and σύντονος and
of the participle ἀνειμένος which in different contexts, from Plato
on, designate the ethical powers of the ancient ἁρμονίαι and the be-
havior determined in those who were accustomed to listen to them,
given that they originally refer to the slackening and tightening of
strings producing this or that sound of those ἁρμονίαι [3–4, 16–21,
59]. Rocconi identifies traces of such lexical usage in Pratinas, a poet
who was active in the early Classical Age [18].

The discussion of the different meanings of τόνος ('il derivato di
τείνω che più ha avuto fortuna in lingua greca quale termine tecnico-
musicale') is very well documented [21–25] and achieves good results,
illustrating how in this case too the contribution of the theoretical lit-
erature to the systematization of technical terminology is fundamen-
tal.[11] As a guide for her account, Rocconi wisely chooses a passage
from Cleonides, *Isagoge*:

> The term τόνος may have four different meanings: note, in-
> terval, vocal range, and pitch.

> Τόνος δὲ λέγεται τετραχῶς· καὶ γὰρ ὡς φθόγγος καὶ ὡς διά-
> στημα καὶ ὡς τόπος φωνῆς καὶ ὡς τάσις. [von Jan 1895,
> 202.6–8]

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[11] Rocconi's account should be integrated with the penetrating observations
of Steinmayer 1985, 176–179.

This text is very valuable because it offers us a veritable catalogue of the different possible meanings of a technical musical term, and testifies that, in Cleonides' time (second/third century AD), there was the need to contain and systematize, to some extent, a polysemy which clearly existed before. It is also valuable because, to explain the first of the four meanings, Cleonides quotes two very important poetic fragments, one by Terpander [fr. 4 in Gostoli 1990, 51–52], and the other by Ion of Chios [fr. 5 in Gentili and Prato 1985, 67]. On the basis of the texts presented by Rocconi, I would add some of my personal observations. In both Terpander and Ion, we find the compound adjective ἑπτάτονος referring to a stringed instrument: the φόρμιγξ in Terpander, and the λύρα in Ion. Now, if a stringed instrument is qualified as ἑπτάτονος, this can only mean that it has seven strings (χορδαί)—which may confirm that the synonymy τόνος-φθόγγος should be also extended to χορδή, so that at least three different terms could be used to indicate the concept of 'musical note'. I add to the rich documentation provided by Rocconi, a gloss by Hesychius [ε 5558: ἑπτάτονος· ἑπτάχορδος in Latte 1966, 182], and, above all, the text by Strabo, who, in quoting the fragment of Terpander, speaks of a λύρα τετράχορδος which was commonly used before Terpander, and a λύρα ἑπτάχορδος which was introduced by Terpander himself, who designated it by means of the adjective ἑπτάτονος:

> Τέρπανδρον δὲ. . . γεγονέναι φασὶ. . . τὸν πρῶτον ἀντὶ τῆς τε-
> τραχόρδου λύρας ἑπταχόρδῳ χρησάμενον, καθάπερ καὶ ἐν
> τοῖς ἀναφερομένοις ἔπεσιν εἰς αὐτὸν λέγεται· σοὶ δ᾽ ἡμεῖς τε-
> τράγηρυν ἀποστρέψαντες ἀοιδὴν ἑπτατόνῳ φόρμιγγι νέους
> κελαδήσομεν ὕμνους. [Strabo, *Geog.* 13.2.4]

To qualify the two types of instrument, Strabo uses two compound adjectives, τετράχορδος and ἑπτάχορδος, whose second parts (-χορδος) are to be connected to the noun χορδή. Now, if ἑπτάχορδος is to be considered as a synonym of ἑπτάτονος, this must mean that the second parts of both compound adjectives (namely, -χορδος and -τονος) are also synonyms. If not the synonymy τόνος-φθόγγος-χορδή, which is confirmed by the texts quoted by Rocconi [21–22nn87–90], all dating to the fifth century BC, at least the synonymy τόνος-χορδή is as old as Terpander (sixth century BC). It may also be observed that when the neutral substantivized adjective τὸ τετράχορδον is used in

theoretical literature to designate a scalar unit formed by four contiguous notes spanning an interval of a perfect fourth, it is clear that the second part of the compound (-χορδος) has lost any link to its semantic provenance because it no longer refers to an instrument's strings but to the musical notes without regard for the instrument or voice producing them. It is a different situation from that of the compound adjective τετράχορδος, -ον, which refers to a stringed instrument, and whose second part still has a pragmatic value because it refers to the strings and not to the sounds.

It is not very easy to pinpoint the moment when each of the technical meanings of τόνος, as documented by Cleonides, began to be stabilized as such. As for one of them, namely 'interval of a tone', I agree with Rocconi's reasoning, except for the conclusion (probably affected by an awkward misprint): according to Rocconi, the meaning is implied by the term διάτονος = 'going on by tones', which appears for the first time, as far as we know, in the text preserved by P. Hibeh 13 and dated with some certainty to fifth/fourth century BC [see Avezzù 1994; Lapini 1994]. If this is so, the term διάτονος of the papyrus is the *terminus ante quem* (not *post quem* as Rocconi states [24]) for the meaning 'interval of a tone'.

According to Rocconi [22], the first occurrence of τόνος in a strictly musical sense, i.e., 'sound with a definite pitch', would be in Aristophanes, *Equites* 530 ff.,[12] where the term would have the same meaning that it is going to take in later times. Rocconi quotes Plato, *Resp.* 617b and Aristotle, *De an.* 424a 30ff as evidence for these developments. In my opinion, however, the meaning of τόνος is not the same in all the three passages, and I think it worth making some clarification.

The passage from Aristophanes has troubled interpreters both ancient and modern.[13] The poet, alluding to the poetic activity of Cratinus, presents it as a stringed instrument that is going into pieces. If this is correct the image seems to contain three very interesting details of a musical sort:

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[12] This comedy was first staged in 424 BC.

[13] For the former, see the scholium to Aristophanes, *Eq.* 532a–c, 533a. The different opinions of the latter are explained in Imperio 2004, 203–207.

- the pegs are falling out—taking for granted, of course, that the term ἤλεκτρος in the expression ἐκπιπτουσῶν τῶν ἠλέκτρων (here unusually declined in the feminine) has to be given the meaning 'peg', which is controversial in that some scholars think it refers to other parts of the instrument;
- the instrument no longer has any τόνος (τοῦ τόνου οὐκέτ᾽ ἐνόντος); and
- the joints of the instrument will not hold any more, or alternatively, the attunements (tunings) are totally impaired (τῶν ἁρμονιῶν διαχασκουσῶν).

Now, if the passage were about pegs, their fall from the instrument would make it impossible to produce any sound at all because the strings would not be under tension any more, a situation where tuning is irrelevant. It is clear, then, that in this passage the term τόνος cannot indicate, as Rocconi states, a particular sound with a certain pitch but must refer to the basic mechanical condition—the tension of the strings—which would make it possible to produce all the sounds of the instrument but which has now failed because the pegs have fallen out. In fact, τόνος does not appear to be a 'technical term' in the strict sense, or at least in the direction indicated by Rocconi. Rather, given this image of the pegs' falling out, we must think that Aristophanes wanted to communicate that Cratinus' poetry is completely ineffective.

In Plato, *Resp.* 617b, the second passage quoted by Rocconi, Socrates tells Glaucon the famous account that he heard from Er about the structure of the entire universe. He says that, according to Er, the universe is made up of eight concentric spheres revolving around the Ananke's spindle, that on the outside of each sphere a Siren, driven by circular motion, produces φωνὴν μίαν and ἕνα τόνον, and that from all eight Sirens there was the concord of a single ἁρμονία (ἐκ πασῶν δὲ ὀκτὼ οὐσῶν μίαν ἁρμονίαν συμφωνεῖν). The interpretation of the myth of Er is not easy, and this is not the place to discuss it in full.[14] Still, it is clear that there is an identity between φωνὴν μίαν and ἕνα τόνον, and that the term τόνος is employed to clarify, from a technical musical point of view, the meaning of φθόγγος. Now, to say that each single sound (presumably vocal: φωνή) produced by each of the Sirens *is* a single τόνος implies that the term is a synonym of

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[14] See, for instance, Proclus, *In Plat. rem pub.* [Kroll 1899–1901, 2.237].

φθόγγος, i.e., 'a sound with a definite pitch' (or, in modern parlance, 'a note')—the same meaning that φθόγγος has in another passage by Cleonides, in which it is said that

> φθόγγος is the melodic incidence of musical sound on one pitch

> φθόγγος μὲν οὖν ἐστι φωνῆς πτῶσις ἐπιμελῆς ἐπὶ μίαν τάσιν.
> [von Jan 1895, 179.9–10]

In *Resp.* 617b, then, τόνος clearly has the meaning noted by Rocconi. Once again, the 'proof' that we are in the presence of a technical term is precisely the fact that it is not applied to the tension of strings but to the pitch of a sound produced by a different source—the Sirens' voice (φωνή).

I do, however, have doubts about the meaning that Rocconi assigns to τόνος in the last passage that she quotes, Aristotle, *De an.* 424a30 ff. The text is concerned mainly with the limits of our sense organs' capacities for perception. Aristotle's general assumption is that when the power or intensity of the objects of sense-perception are excessive, they destroy the sensory organs [424a29–30 τῶν αἰσθητῶν αἱ ὑπερβολαὶ φθείρουσι τὰ αἰσθητήρια], that is, such excesses damage our perceptual capacities. Aristotle explains this as follows:

> ἐὰν γὰρ ᾖ ἰσχυροτέρα τοῦ αἰσθητηρίου ἡ κίνησις, λύεται ὁ λόγος—τοῦτο δ᾽ ἦν ἡ αἴσθησις.

In fact, the ἰσχυροτέρα κίνησις is here a practical manifestation of what Aristotle called earlier τῶν αἰσθητῶν αἱ ὑπερβολαί (the excesses of the objects of sense). Thus, we can say that, when the movement set up by an object is too strong for the organ, i.e., when the perceptual stimulus exceeds the organ's capacity to perceive it, λόγος—that is to say, as Aristotle explains, perception itself—fails.

The example that follows illustrates this rule within the domain of auditory perception: ὥσπερ (*scil.* λύεται) καὶ ἡ συμφωνία καὶ ὁ τόνος κρουομένων σφόδρα τῶν χορδῶν. That is, when the strings of an instrument are struck strongly, συμφωνία and τόνος are no longer perceived. This example is not very easy to understand exactly (which should perhaps have persuaded Rocconi not to present it as a context in which τόνος would obviously be meant as a synonym of φθόγγος). But we know that in music the term συμφωνία always designates the concord between different sounds, and this implies that Aristotle had in mind the production and, thus, the perception of *more than one*

sound. When two consonant sounds are produced by striking the two
relevant strings too strongly, the perception of concord between them
is impaired because an essential factor of both, namely, the tuning,
fails. It is possible to observe this phenomenon on modern musical
instruments; and modern acoustic physicists do allow that the per-
ceived pitch is altered by the intensity of sound production. In other
words, under these conditions, there is an interference between two
factors of sound, the intensity (volume) and pitch [see, e.g., Frova
1999, 121–165]. Consequently, it seems to me that the two terms
used by Aristotle do not refer to the *single sounds produced*, but to
two different factors of the auditory perception, the concord *between*
the sounds (συμφωνία) and the intonation of each of them, each be-
ing considered in its own right (τόνος). In fact, it is scarcely to be
believed that if a string is struck too strongly, *the single sound pro-
duced by it* fails (λύεται), while it is much more plausible to think that
the perception *of that sound's exact intonation* (the τόνος) would be
altered. It is clear, then, that in this case too the meaning of τόνος
is not 'sound of definite intonation' (the same, in Cleonides' termi-
nology, as φθόγγος), as intended by Rocconi. Rather, its meaning is
'intonation' or 'pitch', namely the factor of sound that, employing
again Cleonides' terminology, we should call τάσις. In Aristotle's
example, the τόνος is the precise and specific pitch that the sound
would have if it were produced without excessive force.

In sum, of the three passages quoted by Rocconi as examples
of τόνος meaning φθόγγος, I think that the only one that is really
relevant is *Resp.* 617b and that, given the evidence that she presents,
we are not entitled to conclude that τόνος got this musical technical
meaning before Plato.[15]

Rocconi [22] develops interesting observations on two compound
adjectives in -τονος, namely, ὑπέρτονος and ὀξύτονος. In light of the
passages that she cites from Aeschylus, Sophocles, and Aristophanes,
it turns out clearly that in ὑπέρτονος the second element has none of
the meanings indicated by Cleonides. Rather, it refers to the *volume*
of the sound. As for ὀξύτονος, it seems that, according at least to the
occurrences quoted by Rocconi in which the adjective qualifies the
funeral song (θρῆνος) or lament (γόος), -τόνος might refer in some

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[15] Steinmayer [1985, 176–179] is inclined to dating at least the technical mean-
ing of τόνος = 'interval of a whole tone' sometime in the fifth century BC.

way to the (high) pitch of the voice. Nevertheless, it should be noted that in Greek of this time, the linguistic qualifications of sound refer to the subjective factors of perception rather than to the objective factors in its production. Thus, it does not seem feasible to consider them strictly as technical terms. In this regard, Rocconi's remarks are usefully supplemented by what she argues in chapter 2. I would offer here only a few observations.

Although ὀξύς may sometimes qualify the quickness of objects in motion, the meaning of the compound adjective ὀξύτονος, referring to the air (or wind) in Sophocles, *Phil.* 1093, is not unambiguous: it might mean 'quick', as maintained by Rocconi [22], or 'piercing', as explained by Liddell, Scott, and Jones 1996, *s.v.* Unlike Rocconi [22], I think that in Xenophon, *Cyn.* 6, 20 a clear distinction is made between two characters of sound: the *intensity or volume*, for which Xenophon employs the adjectives μέγας and μικρός, and the *pitch*, for which he employs ὀξύς and βαρύς. A clearer distinction of this same sort is made by Aristotle [see 22n96]. In the passage from Xenophon, the meaning of τόνος in τόνους τῆς φωνῆς seems to be 'sound' rather than 'intonation', as Rocconi [23] seems to understand. Again, I am not completely sure that the meaning of τόνος in Aeschines, *Ctes.* 209 refers to the sound's 'intensità o volume', as Rocconi assumes [23]. Rather, it should, I suspect, be referred to the voice's emotional character: Aeschines is in fact talking about Demosthenes' tears (δάκρυα) and τόνος τῆς φωνῆς, when he asks the Athenians, 'Where can I take refuge?' (ποῖ φύγω;), adding 'You have blocked all the roads, and there is no place where I can take refuge' (περιγράψατέ με· οὐκ ἔστιν ὅποι ἀναπτήσομαι). In this context, it seems more probable to read an allusion to the character (the *tone*) of Demosthenes' pleading voice than to its volume. In short, as I see it, the passages from Xenophon and Aeschines contain references to sound that are non-technical.

As for τάσις, Rocconi [25] very properly remarks that the term's purely musical meaning seems not to have been codified before Aristoxenus [*Harm. elem.* 12.1–4 ~Da Rios 1954, 17.2–4], who defines τάσις as μονή τις καὶ στάσις τῆς φωνῆς. It is obvious that this cannot mean that the concept itself of intonation did not exist before its terminological codification. Moreover, the passage of Cleonides quoted above shows that in the second/third century AD there did exist a synonymy between τόνος and τάσις, which implies that the

concept of τάσις could also be expressed by the term τόνος. I would add that perhaps this synonymy could be traced back to the fourth century BC, when Plato used the term ὁμότονον (the neuter substantive formed from the compound adjective ὁμότονος) to designate the sameness of the pitch (*scil.* of two sounds) [see Plato, *Phil.* 17c4].

Also, within the semantic sphere of the *plucking* of strings with the fingers (ψάλλω and its cognates), it is not always easy to decide whether a given word is used in a technical or a non-technical sense. Nor is it always easy to pinpoint when a given word got a technical meaning and whether this meaning overshadows or even obliterates the common one. Despite these difficulties, the lexical analyses developed by Rocconi [26–32] are sensible and very useful in helping us to understand several technical details of musical performance, and to develop further hypotheses about some possible settings of the real practice of playing stringed instruments in Antiquity. As Rocconi reports [26], the verb ψάλλω originally defines the action of plucking a string of whatever kind (even, for example, that of a bow) and making it vibrate; the employment of the verb in musical contexts, namely, in reference to stringed instruments of the harp type, is documented from the sixth century BC on [see, e.g., Anacreon frr. 93, 96 in Gentili 1958, 65, 67]. In fact, the verb continues to be employed with its original meaning in literature of the late fifth century, as, for example, in Euripides, *Bacchae* 783–784, where it defines the action of plucking the bow's string. Further, there is a hint of a semantic development in Euripides' use of the term ψαλμός at *Ion* 173 [27n126], which again refers to a bow but in this instance to the *sound* produced by the vibration of its string in contrast to the sound produced by Apollo's φόρμιγξ.

According to the evidence we have, it seems that we may confidently conclude that, in reference to stringed instruments, the verb ψάλλω always indicates the action of plucking a string with the fingers and never of striking it by means of the πλῆκτρον. The same could be said for the original meanings of all the technical terms derived from the root ψαλ- [147]. More specifically, on the instruments of the harp family, it is absolutely certain that the sound was only produced by plucking the strings [27]. Nevertheless, as Rocconi persuasively argues, it is by no means certain that on the instruments of the lyre family the sound was only produced by striking the strings with the πλῆκτρον: the strings of these instruments were either struck

or plucked and, on occasion, both the techniques were performed at
the same time. For the Classical Age, plucking is documented in a
series of texts [28];[16] and Rocconi is right to say that 'la circoscrizione
di ψάλλειν alle sole arpe sembra comunque un fenomeno linguistico
abbastanza recente e non univoco', and to suppose that the oppo-
sition within the group of the stringed instruments between being
plucked (ἐπιψαλλόμενα) and being struck (κρουόμενα) probably ap-
pears no earlier than the Hellenistic Age. In this context are to be
interpreted some interesting pieces of epigraphical evidence [27n126],
related to two different musical specialities of the educational pro-
gram in the middle of the Hellenistic Age in which young students
competed: the κιθαρισμός that required use of the πλῆκτρον, and
the ψαλμός that required plucking with the fingers. I would add
that, since it is not known that a different instrument was used for
each of the two specialities, it could well have been a single instru-
ment on which both were allowed. Moreover, there are a number of
occurrences of ψαλμός in the sense of 'sound produced by a stringed
instrument', without any clear and technical reference to a particular
instrument and/or a particular way of producing the sound [27n126].
Considering that all the texts adduced by Rocconi date to the sec-
ond century AD [Plutarch, *Alex.* 67.5, *Pomp.* 24.5; Aretaeus, *De cur.
acut. morb.* 1.1.5], I would note that the technical distinction between
ἐπιψαλλόμενα and κρουόμενα already at work in theoretical texts of
that period did not rule out the non-technical use of the word.

Rocconi discusses a series of texts by Plutarch in which the verb
ψάλλειν defines the musical activity that takes place within sympotic
contexts.[17] On the basis of her reasoning, she presents a sensible and

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[16] Ion fr. 5 in Gentili and Prato 1985, 67: Ion employs the verb ψάλλω in
reference to the λύρα. See also Herodotus, *Hist.* 1.155.4 and Plato, *Lys.*
209b, along with the scholium *ad loc.* [Greene 1938 458], where we are told
of two different ways of performing on the λύρα. Rocconi's quotation of
Dionysus of Halicarnassus *De comp. verb.* 25, which concerns the ability to
play the cithara (οἱ κιθαρίζειν τε καὶ αὐλεῖν ἄκρως εἴδοτες) [8n133], does
not seem relevant.

[17] Plutarch, *Per.* 1.6; *Pomp.* 36.4; *Arat.* 6.4; *An seni resp. ger.* 785f. [see 28–29].
In another series of Plutarchan texts [29]—*Quom. adul.* 67f, *De Alex. fort.*
1.334c, *Quaest. conv.* 2.634d, and *Reg. et imp. apophth.* 179b—we find a re-
markable use of the term ψάλτης, which, according to Rocconi, designates
'the typical instrumentalist' engaged in sympotic contexts. Among the pas-

plausible hypothesis.[18] She argues that in such semi-private contexts, a very strong sound was unnecessary; thus, the accompaniment to song was performed by plucking the instrument's strings[19] and not by striking them with the plectrum. In addition, Rocconi notes that the occurrences of the verb ψάλλειν in sympotic contexts are as old as some texts of Anacreon [fr. 93 in Gentili 1958, 65] and Pindar [fr. 25 in Maehler 1989, 111: see 26, 27n123; Steinmayer 1985, 210–211], and that in the *symposia* from the Classical Age on there often appear female players of stringed instruments called ψάλτριαι [29–30]. A more detailed scrutiny of the iconographic evidence would, I expect, bring further confirmation of Rocconi's hypothesis.

From another point of view, we might suggest that ψάλλειν and its derivatives do not have very specific technical meanings but refer

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sages cited, the setting in a symposium is explicitly mentioned in *Reg. et imp. apophth.* 179b and *Quaest. conv.* 2.634d only; but it should of course be understood also in the other two, considering that in all four there is an account of the same episode in different argumentative contexts—Philip of Macedonia is elegantly silenced by a musician with whom he had tried to discuss technical questions.

[18] Regarding the passages that she cites [28–29: for references, see n17 above], Rocconi states that 'when the verb ψάλλειν refers to the lyres, the context in which it is preferably employed is the symposium' [28]. But none of the sympotic texts that she cites mentions any musical instrument explicitly. Indeed, evidence that in sympotic contexts the stringed instruments which were prevalently used were those of the lyre family (λύρα, otherwise known as χέλυς, and βάρβιτος/βάρβιτον) comes from other literary sources and from copious iconography. It might, therefore, have been helpful if Rocconi had noted that in the Plutarchan passages the reference to instruments of that type is no more than implicit, even though it is probable.

[19] Rocconi [29] recalls a part of a text which, in its entirety, seems problematic. In Plutarch, *Apophth. Lac.* 33.233f., we are told of a fine imposed by the Spartans on a musician who played his stringed instrument with his fingers: ψάλτης ἐπιδημήσαντα ἐζημίωσαν, ὅτι δακτύλοις κιθαρίζει. It is clear that the word ψάλτης here cannot be meant in a technical sense to designate a player of a stringed instrument of the harp family, whose strings were usually plucked. After all, why would he be fined for playing the instrument with his fingers, that is to say, by playing it exactly in the way it should be played? But if, as seems quite likely, the verb κιθαρίζειν means here 'to play the κιθάρα', then ψάλτης designates the player of that instrument (or else the singer who uses it to accompany his own song) who in this instance was fined because he played it in an unusual way, namely, without the πλῆκτρον.

generally to the action of playing stringed instruments (very likely, given the sympotic context, the lyre) almost always in accompaniment to the song but without any reference to a particular method of sound production. Moreover, the word ψάλτης is not always used as a technical term referring to a player of a stringed instrument whose strings were usually plucked; it also serves to define in general a stringed instrument player *tout court*, without any reference either to the instrument itself or to a specific way of sound production [see, e.g., P. Hibeh 1.13.col. I 7; col. 2.7–8]. In this sense, Rocconi offers a very useful contribution in recalling some interesting semantic developments, namely, ψαλμός = 'sound' [27],[20] which may be compared with κροῦμα = 'sound' [40], ψάλλειν = 'to sing', and ψάλτης = 'singer' [30–32]. In these cases too, the process from concrete to abstract is evidence that the words involved became real technical terms. The texts cited by Rocconi allow us to see how, from the Classical Age on, these words were not only connected to the sphere of instrumental sounds but also to that of the human voice.[21]

There was, however, a decisive semantic shift of ψάλλειν from the sphere of the instrumental sound to that of singing within the Christian tradition, a shift surely influenced by the *Septuagint* (third century BC), which uses ψαλμός to translate the Hebraic 'mizmor',

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[20] Rocconi maintains [27n123] that in Pindar [fr. 125 in Maehler 1989, 111] the term πακτίς designates the βάρβιτος. But this seems incorrect: in Pindar's text, it is said that Terpander invented (εὗρεν πρῶτον) the βάρβιτος while listening to the sound (ψαλμὸν... ἀκούων) of the πακτίς. The passage is problematic in other details as well [see West 1997, 48]; but it is clear that each of the two terms indicates a different instrument and that the meaning of the term ψαλμός is specifically referred to the sound produced by plucking the strings of the πακτίς.

[21] See Ion fr. 22 in Snell and Kannicht 1971, 102; Aeschylus fr. 57.7 in Radt 1985, 179; pseudo-Euripides, *Rhes.* 360 ff. All these texts are recalled by Rocconi on pages 29 and 31. It is curious that, within a few pages, Rocconi provides two different interpretations of Herodotus' κιθαρίζειν τε καὶ ψάλλειν [*Hist.* 1.155.4]. In one instance, she interprets the phrase as as a hendiadys designating the act of playing the cithara *and* singing [31]; in another, as a linguistic evidence of two *different* ways of playing the instruments of the lyre family—κιθαρίζειν involving use of the πλῆκτρον and ψάλλειν involving the plucking of strings with the fingers [28].

which designates a hymn sung to the accompaniment of a stringed instrument whose strings were usually plucked [31n149]. From this moment on, within the Christian tradition, the term ψαλμός indicates specifically the chant even without instrumental accompaniment.[22] Yet, verbs like ἐπιψάλλειν and a noun like ἐπιψαλμός still remain confined to the sphere of instrumental sound [32].[23]

Pages 32–51 should be considered as the most complete account on the semantic sphere of κρου- in musical contexts. Words connected to κρου- were originally and prevalently employed in relation to stringed instruments; due to their semantic extension, we also find them used of wind instruments, and, in a very limited number of occurrences, of vocal sounds. Among the derivatives of κρούω, Rocconi dwells on ἀγκρούομαι [48–49], which means, technically, 'to play an instrumental prelude to the song'. But the verb appears to have more general meanings as well, such as 'to play, to perform (vocal or instrumental) music', or 'to begin (a musical piece)'. Furthermore, it should also be noted that, in Plutarch *Cleom.* 16.6 (a passage that Rocconi does not take into account), the verb has the different meaning 'to retune, to bring again to a proper pitch'.

In chapter 2, 'Percezione acustica e descrizione *metaforica* del suono presso i Greci' [53–80], Rocconi shows that an important part of the technical vocabulary of music originates from the vocabulary of acoustic perception. All the available evidence of the relevant ancient Greek theories is found in texts later than the archaic period: for earlier periods, we only have literary documents in which words refer to the perception of acoustic phenomena in quite a general way. Since ancient Greek, like all other languages, as we have seen, has no words specifically related to the sphere of auditory sensations, the vocabulary of this domain was developed by analogy, metaphor, or synaesthesia—what Rocconi rightly calls 'aggettivazione primordiale

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[22] Note that in modern Greek ψάλτης means the singer who takes part in the liturgical services of the Orthodox Church.

[23] The occurrences of the verb ἐπιψάλλειν have either the general sense 'to play a stringed instrument' [Philo Judaeus, *Quod Deus sit immutabilis* 25 and perhaps also Sophocles fr. 60 in Radt 1977, 136: see 32n158] or the more specifically technical sense 'to accompany the song with a stringed instrument' [Plutarch, *Quaest. conv.* 713b; Philo Judaeus, *Somn.* 37]. The noun ἐπιψαλμός occurs in Ptolemy [Düring 1930, 67.7 ff.] and designates a specific instrumental technique.

squisitamente *soggettiva* o *psicologica*' [53]—using language originally
employed to qualify other perceptions. Thus, the chapter is divided
into four sections depending on the perceptual sphere involved:

- ○ *Termini della sfera tattile* [54–69]
- ○ *Termini della sfera visiva* [69–77]
- ○ *Termini della sfera gustativa* and
- ○ *Termini della sfera olfattiva* [79–80].

As usual, the discussion is very stimulating and rich in references:
where not discussed in full, a number of texts are cited in footnotes.

In the earlier stages of the history of ancient Greek, acoustic
perceptions were identified without making rigorous distinctions be-
tween the different features of sound: each of these features—pitch,
volume, timbre, duration in time—were isolated and studied sep-
arately from one another only much later (in modern physics, of
course). Thus, these features had no special denominations in an-
cient Greek for a long time. Numerous words belonging to the vocab-
ulary of perceptions, words which would eventually become technical
terms in this or that sense, were applied to sound in a very general
and global way, each of them defining sometimes more than one fea-
ture at at a time.[24]

Rocconi notes that most archaic adjectives describing sounds
treat them as ' "corpi" fisici (ὥσπερ καὶ τὰ σώματα) o "grandezze"
materiali (μεγέθη)' [54]. In this regard, among the texts that she
cites [54n306], Philolaus fr. 6 [Diels and Kranz 1951, 409.10] seems
to me irrelevant. In it the expression ἁρμονίας μέγεθος refers to
the width of the interval of an octave, not to the 'dimension' of a
single sound. Still, Rocconi wisely observes that a number of words
primarily pertaining to the tactile sphere were employed in musical
technical vocabulary to indicate specific qualities of sound in either
of two possible ways, giving life to two different groups of terms:

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[24] In fact, the clearest expression of the distinction in Antiquity between the
pitch and intensity of sound is found, as far as we know, in Aristotle, *De
gen. an.* 787a2ff (ἀλλ᾽ ἐπειδή ἐστιν ἕτερον τὸ βαρὺ καὶ τὸ ὀξὺ ἐν φωνῇ με-
γαλοφωνίας καὶ μικροφωνίας). Granted, such a distinction in implied in
Xenophon, *Cyn.* 6.20, but precise distinctions seem to occur only within
strictly technical literature.

- ○ pairs of antonyms used in common language were transposed as such into technical musical vocabulary while preserving their antonymic value, and
- ○ pairs of words that were not antonyms in common language became antonyms in technical musical vocabulary.

The first group is certainly the largest; it includes such pairs as:

μέγας/μικρός	big/small
σκληρός/μαλακός	hard/soft
λεπτός/παχύς	thin/thick
ἀραιός/πυκνός	loose/compact and
τραχύς/λεῖος	harsh/smooth.

The second, very much smaller group includes the very important opposition ὀξύς/βαρύς (piercing/heavy), which served within the technical vocabulary of music to qualify sounds that are high/low in pitch. In its original sense, the antonym of ὀξύς is not βαρύς, but ἀμβλύς; and the antonym of βαρύς is κοῦφος. In fact, it is hard to imagine how any music theory, however primitive, could have come into being without the concepts of high and low pitch [Steinmayer 1985, 35–36] and, of course, without the relevant terms for them.

A number of these terms retain some polysemy in acoustic or musical contexts. Consider, for example, the meaning of μαλακός [59–61], an adjective used in a strictly technical sense only to qualify a variety of the diatonic genus (γένος διατονικὸν μαλακόν), while in some texts it qualifies either low pitched sounds (as a synonym of ἀνειμένος, in opposition to σύντονος), sounds of low intensity, or the ethically debauched character of some ἁρμονίαι that lead the listeners to types of behavior considered unethical. In this regard, Rocconi [61] rightly speaks of fluctuation in the meaning of μαλακός from the pragmatic to the perceptual spheres.[25] Furthermore, the antonym σκληρός seems to designate the timbre of sounds primarily. For, although the pragmatic sense of μαλακός points to the slackening of strings of an instrument as the reason for the low pitch, this is not the case for σκληρός: it does not point to any reason for high pitch

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[25] In the qualifications of the ἁρμονίαι in Plato, *Resp.* 398e, it seems that μαλακός has a rather general than a strictly technical meaning, while χαλαρός is technical jargon: see Barker 2005, 25–27.

[62]. In addition, the pair ἰσχυρός/ἀσθενής (strong/weak), although
it would seem appropriate only for referring to the intensity of sound,
appears together with other adjectives that qualify timbre and pitch
[61n356]. As for λεπτός, it is not always easy, even when the adjective
occurs in technical texts, to identify precisely which character of
sound, if any, it qualifies (pitch, intensity or timbre) or to decide
when it simply refers to the sound's pleasantness in general.

Rocconi discusses a series of passages from poetic texts dating
from the Homeric poems to the fifth century BC in which ὀξύς and/or
βαρύς qualify sound in a quite general way. It is important to note
that these very general meanings were the starting point for the
development of the technical ones, which were intended to qualify
with increasing precision the pitch of the sounds [56–57]. On the basis
of the textual materials discussed by Rocconi, it would be appropriate
to reflect that in Greek the adjective ὀξύς derives from the root **ak-*
(which includes the notions of sharpness and hitting) and properly
qualifies objects such as points capable of pricking or blades capable
of cutting.[26] By extension, analogy, or synaesthesia, the adjective
gained a number of other usages, e.g., to qualify the speed of objects
in motion, a person's mental acuity, the impulsiveness or hastiness of
actions or behavior, and especially one's subjective impressions and
sensations (*via* sight, taste, smell, hearing) or the things that cause
them.[27] If we observe the different occurrences in which ὀξύς refers
to sound, we see that this adjective does not necessarily qualify only
one of its features, namely, its pitch. Indeed, it may also refer to
the capacity that the sound has to induce auditory sensations in the
percipient subject similar to the tactile ones induced by sharp objects.
A sound thus qualified as ὀξύς is perceived as affecting the hearing
in the same way as a sharp object (for example, the tip of an arrow
or needle) affects touch (analogy). From such usage, we see that
sound is in this instance conceived as a body. Now, in my view, to
be certain that, in a given context, such a qualification has a strictly
technical musical value, we should also be sure that it exclusively (or
at least prevalently) refers to the pitch of a sound: and this certainty

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[26] See Chantraine 1999, *s.v.* ὀξύς, and words such as ἀκίς, ἄκρος, ὠκύς, ἀκμήν,
acer, *acus*, *acies*, and so on.
[27] See Liddell, Scott, and Jones 1996, s.v. ὀξύς; Steinmayer 1985, 142–144.

is not always easy to get, especially because a high pitched sound is almost always penetrating in timbre as well.[28]

Steinmayer sketches the pathway to the technical development of ὀξύς in this way:

> The sounds called ὀξύς are of higher pitch relative to others, and... from constant use to describe higher-pitched sounds, the adjective developed a technical sense of 'high-pitched' which dropped the sense of sharpness... As in the case of βαρύς, it would be difficult to admit, in spite of the lack of attestations, that this technical sense did not exist in the fifth century, for it already exists in Plato, and must (or some such word serving the purpose of distinguishing high and low pitch) have been required by even the earliest musical theorists. [Steinmayer 1985, 143]

Indeed, ὀξύς and βαρύς appear as antonyms referring to the pitch of sounds, that is to say, as technical terms in some of Plato's dialogues which, even though they were written in the fourth century BC, were set in the fifth;[29] and the first occurrences of ὀξύς qualifying technically high pitched sounds are in two fragments of the Pythagorean philosophers Philolaus (*ca* 470–390 BC) and Archytas (*fl.* between 400 and *ca* 350 BC).[30] Moreover, according to Aristotle, it was Heraclitus

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[28] Such a qualification occurs in modern languages too: e.g., in Italian, 'acuto', 'penetrante'; in English, 'sharp', 'piercing'; in French, 'aigu'; in German, 'scharf'; in Spanish, 'agudo'. Moreover, in Italian, the opposition 'acuto-grave' operates in exactly the same way as the opposition ὀξύς-βαρύς does in ancient Greek and has a strictly technical musical value, serving exclusively (or at least prevalently) to indicate the pitch of a sound.

[29] Rocconi [56n314] recalls Plato, *Symp.* 187a–b, *Phaedr.* 268d, *Phil.* 17c, *Crat.* 399b, *Tim.* 80a, as well as Xenophon, *Cyn.* 6.20. (In my view, the reference to *Cratylus* is not connected to the matter at hand, because in that Platonic context the couple ὀξύς/βαρύς does not concern musical sounds but the accent of the words.) Perhaps we should recall also Plato, *Leg.* 812d, a passage dealing with the ὀξύτης and βαρύτης of the sounds in a clearly technical sense with reference to their pitch, which Rocconi quotes in a different context [65].

[30] Archytas fr. 1 [Diels and Kranz 1951, 431–435] which mentions the utterance of strong and high-pitched vocal sounds, and Philolaus fr. 6 [Diels and Kranz 1951, 408–410], in which the expression δι' ὀξειᾶν appears. Rocconi cites the first [56n319] but not the second passage.

(*fl. ca* 500 BC) who developed observations about ὀξύ and βαρύ in reference to ἁρμονία,[31] and in this case too we ought to imagine that the words in question had technical meanings.

From Rocconi's argument [55], it seems to emerge that, as she sees it, unlike ὀξύς which was employed to qualify a sound that is perceived by the listener, βαρύς referred to the emotion felt *by those who produce the sound, and not by those who perceive it.* In the formulaic expression βαρὺ στενάχων (literally, 'groaning heavily') found in a number of Homeric poems [see 55n311], the adverbial neuter βαρύ would qualify

> la *pesantezza* del dolore (e del conseguente lamento) da un punto di vista soggettivo. Il gemito è 'grave' nel senso che opprime l'animo come un peso.[32]

The same argument is made in reference to Aeschylus, *Pers.* 571 (στένε καὶ δακνάζου, βαρὺ δ᾿ ἀμβόασον). Yet again, it seems clear to me that in both cases the verbs στενάχω, ἀμβοάω) indicate two different ways of *producing* the sound, and that the adverbial neuter points to the way of *perceiving* the sound produced.

The difference in the meaning of the two verbs that Aeschylus uses ('groan' and 'cry') may, I expect, be of some importance from an expressive point of view; but Rocconi seems to understand both verbs as denoting the same action as that of uttering a 'lament' (γόος), an action referred to in Sophocles, *Elect.* 243 (ὀξυτόνων γόων) and in Euripides, *Phoen.* 883 (πικροὺς γόους). In fact, however, that βαρύς does not qualify the emotion felt by someone who consequently utters a sound but qualifies the sound produced itself is easily be seen in Homer, *Od.* 8.95 and 534 (both passages cited by Rocconi). In these passages, the finite verb (ἄκουσεν) in the formulaic expression

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[31] Aristotle, *Eth. Eud.* 1235a25, a passage not cited by Rocconi.
[32] On the same line, according to Kaimio [1977, 40], in *Il.* 18.70–71 βαρὺ στεναχόντι, as opposed to ὀξὺ κωκύσασα, 'does not refer to a proper quality of sound at all but to the heaviness of Achilles' sorrow'. But I think that the verb στενάχω involves the *production* of a sound, and that βαρύ modifies the *sound produced.* Moreover, Kaimio interprets ὀξύς in such a way that excludes its qualifying the pitch only: granted, it is Thetis who cries (the verb used here is κωκύω) and her feminine voice is certainly higher in pitch than her son's; nevertheless, in this context it is not a matter of high pitched sounds but of loud ones.

βαρὺ δὲ στενάχοντος ἄκουσεν indicates someone's (Alcinous') listening to the lament uttered by someone else (Odysseus). This means that a 'heavy' sound, even if it is prompted by 'heavy' emotions, is in any case still a sound *produced* by someone; and syntactically speaking, βαρύς cannot, of course, qualify anything other than this sound. Moreover, in this sense, Aristotle, *De an.* 420a29 ff. [see 55n23] says that what is heavy (τὸ βαρύ), like what is sharp (τὸ ὀξύ), 'moves' (κινεῖ) the senses.

The discussion of the terms borrowed from the visual sphere (the only one that contains both adjectives and nouns) is the most convincing, perhaps because we have a clearer documentation. Rocconi [69] divides the topic into two different groups of terms: those pertaining to the sphere of color and light and closely connected to the description of sound as a body in a physical sense (with its qualities of form and color), and those that mostly indicate a surface or τόπος (*scil.* τῆς φωνῆς), διάστημα/σύστημα, ὅρος, πέρας, ἄκρος, χώρα, εἶδος, σχῆμα, διάγραμμα, ἀκαριαῖος, and so on. The terms that become properly technical are χρῶμα ('color'), which provides the root for the denomination of the γένος χρωματικόν, one of the three γένη of musical theory, and χρόα, which refers to the different varieties (literally 'shades') of the γένος χρωματικόν and of the γένος διατονικόν. It is remarkable that some of these terms (for example, λαμπρός) were also employed to define the incisiveness in the articulation of sound [71].

In her fascinating third chapter, 'Suoni animali e suoni musicali: gli epiteti *omomatopeici* e la formazione del lessico tecnico' [81–98], Rocconi provides a detailed examination of the very few words originating from onomatopoeia that were applied to sounds and music in Greek. She distinguishes [81] between words imitating the sound of a musical instrument[33] and words originally born as onomatopoeic representations of the sounds of nature and eventually transferred by metaphor into the vocabulary of music. The words in this second group derive from the verb τερετίζω and originally designate the swallow's shrieking or the cicada's chirping. Rocconi shows clearly that the only word which eventually becomes a real technical term is τερετισμός, word used in a number of cases as a synonym of αὔλημα but also applied to sound produced by the human singing voice, as

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[33] Words such as τήνελλα created by Archilochus or θρεττανελό and τοφλαττόθρατ which appear in Aristophanes [see 81nn497–499].

well as by stringed instruments. The long history of this interesting technical development is traced convincingly, and the different technical meanings are usefully outlined in the glossary [144].

In conclusion, Eleonora Rocconi has produced a very useful tool: scholars who wish to make further inquiries in the lexicological field of ancient Greek music ought to start from her work and to take it into serious consideration.

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Corrigenda

12n42 line 1	'destra', not 'sinistra'
17n61 lines 4–5	ἐπιτεινομένῳ, not ἐπιτεινομένῳ, and ἀνιεμένῳ, not ἀνιεμένῳ
23 line 2 (from bottom)	ὀξειᾶν, not ὀξεῖαν
24n103 (end)	ὀξειᾶν, not ὀξεῖαν
27n120 line 1	'una', not 'un'
27n121 line 2	'capaci', not 'capace'
27fn122 line 2	'Trendall', not 'Trenddell'
28 penultimate line	'36.4', not '36.3'
28 last line	ψήλασα, not ψήλαντα
29 lines 9–10 (from bottom)	'pizzicata', not 'pizzicato'
29n137 line 3	ἔκρουε, not ἔκρου
31 line 10	'una', not 'un'
32 line 17	ἐπιψάλλωνται, not ἐπιψάλλονται
35n185 line 3	ἐκρέκεσ', not ἔκρεκεσ'
37 line 11	Ἕλληνας, not Ἑλλήνας
38n201 line 1	'1132f', not '1132e'
41 lines 4–5	'vengono', not 'vengano'
41 line 5	τόνος, not τονός
47, second paragraph line 2	'sostantivo', not 'aggettivo'
48 line 1	'sostantivo', not 'aggettivo'
56n316 line 2	διαφορὰς, not διαφορᾶς
60 line 15	λεπτὰς, not ληπτὰς
63 line 5	λεπτή, not ληπτή
83 line 10	'una', not 'un'
87n540 last line	'uno', not 'una'
89 line 8	'Analytica', not 'Analitica'
90n553 line 1	'Neubecker', not 'Nenbecker'
90n554 line 1	'Filosofi', not 'Sofisti'
91n562 line 5	'preposizione', not 'proposizione'
92n567 line 2	ᾄδη, not ἄδη
93n569 line 6	'Analytica', not 'Analitica'; 'Wallis', not 'Wallies'
94 line 6 (from bottom)	'preposizione', not 'proposizione'
99 line 6 (from bottom)	'Benitz', not 'Benitez'
99 line 7 (from bottom)	'48, 1998', not '47, 1997'
100 lines 9 and 26	'Möllendorff', not 'Mollendorff'
100 line 10 (from bottom)	'Synaulia', not 'Synanlia'
100 line 3 (from bottom)	'Ciancaglini', not 'Ciancaglimi'

101 line 23	'interpretatione', not 'interpretazione'
102 line 14 (from bottom)	'Fernández', not 'Fernàndez'
105 line 7	'schema', not 'shema'
105 line 11	'traduzione', not 'tradizione'
106 line 18	'Trendall', not 'Trenddell'