

TEMPO, SPACE AND MUSIC

"(...) theater is an art only in so far as it questions its own process - if it dies not, it falls into the category of clichés or deteriorates into imitation, pure and simple. It was therefore necessary to accompany theater practice with a reflection on that same practice. And to share the results with others. For if it is impossible to create creators, it is possible, indeed it is vital, to show theater people, most particularly actors, different ways through which they may reach that creating state without which there is no theater. (...)"

Constantin Stanislavski

Would many self-proclaimed major figures of the music world only take time to think about this striking remark by Stanislavski - substituting 'music' for 'theater' - they should reconsider their own standpoint, if not drastically change their course. As far as we are concerned, we'd much rather think first, exchange opinions with others, work out the average of evidence and doubt, and try and apply the conclusions we have reached.

1. As far as *Tempi* are concerned, NOTHING is ever systematic, NOTHING is superfluous. Thus armed, we are ready to embark on our fundamental approach, which aims at identifying the rhythmic 'direction' of a piece of music. 'Standard' Italian names : *adagio*, *andante*, *allegro*, *presto*... are but composition tools which, associated to a score, indicate the general direction of the movement which animates it.

2. No *Tempo* indication should ever be read independently from its associate piece. *Prestissimo* by itself does not mean 'as fast as possible'. Neither does *adagio* mean 'as slow as possible'. The word *Tempo* is not synonymous with 'speed'. Rather, it refers to a certain type of given movement, to be identified according to rhythm, form and affect.

3. Once the structure of the piece is understood and its movement determined, the rendition factor remains to be considered. Depending on it, possible fluctuations in the general movement are acceptable in so far as they do not disfigure the structure of the text and its affect.

Unfortunately, *Tempo* nowadays no longer provides food for thought - indeed, it has gone into the 'fast-food' category. Instead of being worked on, pieces are merely 'repeated'. In some cases, one does not even bother to read the music again properly. Of course, in a way, what could be simpler than Mozart's *Tempo* markings ? or more transparent than his writing ? But erring is human - and very easy, especially if one falls into the dual pitfalls of mannerism and automatism, aka tradition. How then can one even think of playing Mozart ? And which criteria should preside over the choice of tempi in order to reconstitute the organic unity of the piece ? There can be no 'recipe', no ready-made answer in that matter. Only a somewhat complex, and sometimes heavily academic approach, can lead to the necessary conclusions.

The original composition, and nothing but the original composition, is here the one and only legitimate reference. In consequence, a complete analysis of the piece (in terms of rhythm, harmony, form and style) is necessary. This should be enough in itself. But, since our approach and conclusions have already stirred up many objections, it seems fitting to give a brief and perforce non-exhaustive presentation of our theories and some of the major themes of our research.

One last word in order to answer a frequently asked question and to assess the scope of our study : our totally justified research is relevant for pre-20th c. repertoire (in some cases, even until 1911 - Mahler's death).

We are most indebted to Prof. Willem Retze Talsma whose major work : *Wiedergeburt der Klassiker* (1980) launched the "Tempo Giusto" movement, as it is known today in Germany and Holland. Professor Talsma's scientific research dealt with the various issues of tempi and opened new avenues which, unfortunately, only few followers tread nowadays, like Dr Grete Wehmeyer and Dr Christoph von Gleich.

What about Mozart ?

Mozart never wrote any metronome markings. Not only was the metronome a later invention, but the composer never even used other timepieces, such as the chronometer or the clock, the use of which played a much too minor role. The few legitimate metronome markings to be found in his music are due to his contemporaries Czerny and Hummel. The information they provide should be read according to the same principles which apply to the interpretation of Beethoven's tempo markings. But it makes no doubt both our reflection and the study and interpretation of 'Italian' markings as they are found in Mozart's music should be based on the same principles. Composers used one system or the other out of the same frame of thought. One may well imagine that, apparently more constraining, and often read in a purely mathematical sense (as we tend to do again today, in a well-meaning but ill-directed attempt at 'historical truth'), metronome markings lead to misinterpretations which -apparently- more 'flexible' indications would probably avoid. This may be the reason why many 19th c. composers, all in favour of metronome markings at first, stopped using them.

A little solace for Wolfgang's tormented soul, though : one cannot interpret his music without being able to understand the relationship between his writing and the peripheral tempo marking attached to it. Isaac Newton used to say that his writing was purposely "difficult" in order to discourage bad mathematicians. Unfortunately, until the beginning of the 19th c., composers did not succeed in discouraging that many people.

Theoretical data - or : the why ? factor

Rhythm is the cornerstone, the center of gravity of music. It is the basis of all musical discourse, formal research, and effect and should be every composer's, musician's or pedagogue's major preoccupation. Mis-written or misunderstood, the rhythmic structure of a piece may shatter all or almost all its affect.

Ever since the Renaissance, reflections on the movement of music have spawned numerous theoretical writings. In many cases, these reflect the musicians' own preoccupations. Some composers and theoreticians give but the characteristics of every type of time-signatures, trusting musicians to 'do it right'. Others, aghast at hearing so many different interpretations of one and the same piece, and fearing the resulting distorting effect on their music, are visibly trying to find a reliable way to make their intentions clear.

The chasm between duality and language :

How can one indicate the movement of a piece ? Until the very beginning of the 19th century, both theoreticians and composers have been advocating, and resorting to, three fundamental tools :

- 1) the human pulse (systole/diastole) ;
- 2) words (Italian markings : *adagio*, *andante*, *allegro*, *presto*... *tempo ordinario*, *tempo giusto*) ;
- 3) the ticking of the clock or the pendulum (the second).

Since the beginning of the polyphonic era, the bar unit is associated to the human pulse. This evidence, to be taken carefully, has two immediate consequences. First : every bar is immediately perceived as a two-part unit, according to the organic systole/diastole movement. Second : as a consequence of the evolution of the musical language and instrumental music, rhythmical structures became more elaborate, and needed more specific transcription.

During the 16th century, it became clear that the 'human pulse' was much too vague an indication. French and Italian composers were mostly concerned with precisising the character or *affetto* of the music with specific words. At the same time, various attempts to rationalize rhythm even more lead to the invention of mechanical devices such as the clock.

It will take Italian expressions more than 100 years to impose themselves. Their French counterparts were too much associated with dance movements and '*airs de caractère*' to survive and finally vanished. But the core information given by Italian expressions was soon reduced to a simple general indication about the piece being slow or moderate or fast. As to mechanical devices, the pendulum will be first superseded by the chronometer, which in turn will evolve to become our metronome, almost two hundred years after it was first invented. Theory and practice thus developed almost in parallel.

The few minor problems which sometimes exist due to the too general character of the main Italian *Tempi* indications should - in theory - disappear with the association of numerical values and time signatures. Yet it is not so. And the main question is to know whether to apply numerical values in a mathematical or a metric sense.

The main idea is that the thesis-arsis (down-up) principle is actually common to both methods in order to determine the tempo. This principle takes us back to the human pulse systole-diastole system; to the movement of the clock, and, by analogy, to the two clicking sounds of the metronome arm.

This proves fundamental for, most of the time, metronome movements will be set by analogy with the human pulse. For example, the following metronome marking : "72" = crotchet in 4/4 should be read thus : the metronome is set to "72" and the crotchet - the unit of time, the beat - is materialized naturally by the dual movement (left/right) of the metronome arm (in a modern, «mathematical», reading of the metronome markings, this means : "36" = crotchet).

Anyone interested in knowing how far this fundamental rule of metrics applies to other arts besides music and dance, should consider the language of poetry and drama. Without metric syllabic subdivision, can one conceive the tranquil '*quatorzain*' (lines of seven metrical feet with two clearly marked caesura), or the manifold expressions of the Shakespearean iambic pentameter (blank verse)? The story goes much further than a simple analogy between written dialectics and musical language.

The metrical answer !

Analytical notions on the unit of time and its mathematical and metrical uses :

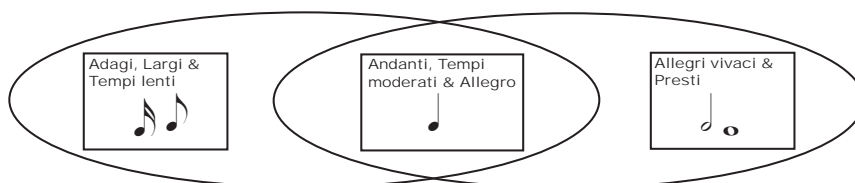
What are the basic principles for applying the unit of time to Italian or general tempi markings?

We rely on the cross examination of three essential data :

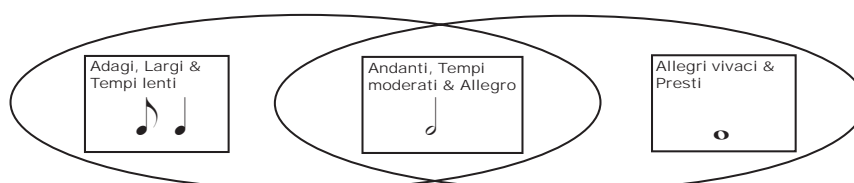
1. note value (whole note, half note, crotchet, quaver, etc.) ;
2. time signatures (4/4, 3/4, 3/8, 6/8 etc.) and their respective beats (1/4, 1/8 ...)
3. agogics : adagio, andante, allegro, presto... .

The starting point is the unit of time in the bar. The quicker the *Tempo*, the longer the value of the unit of time. The reverse is also true. This mirror effect is essential to identify the mathematical indications or understand the resulting metric.

Time signatures with time unit : crotchet



Time signatures with time unit : half note



At the end of the 18th century, this leads to the notion of tempo giusto, a notion which is in danger of becoming inert. Its reference is an *Alla Breve* time signature in which the half note reads : ♩ = 60 or 72 or 80 with the subsequent subdivisions. According to theory, tempo giusto is at the very core of every musical composition, even if more or less hidden under indications which do not designate it directly. But the problem is to analyse the relationships between agogic markings, time signature and unit of time, within an organic relationship with tempo giusto. The necessity of such an interpretation is the controversial point between our analytical and artistic approach and the usual one.

After careful study of various original metronome indications, first of all Beethoven's, we are convinced that they in themselves are not problematic. It is rather their reading which may induce complications. In general, mathematical indications will call for a metrical reading (i.e. keeping in mind the subdivision of the measure unit to which the metronomic indication applies).

Thus, in the first movement of Beethoven's 9th Symphony, the mathematical indication ♩ = 88 imposes the following metric reading : ♩ = 88.

On the other hand, metrical readings should be neither systematic nor totally detached from their context of rendition, especially *adagi* and *andanti*. We shall not talk about the way these principles are applied differently to different *Tempi*, slower or faster, in simple or compound time. But the principles stand firm, and the issue is now clearly out in the open.

The evidence of equivalence :

The consequence of numerous *Tempo* changes within a piece will be a clear equivalence between slower and livelier parts, and as far as transitions are concerned, between simple and compound times. In order to be perceived as identical, a rhythmic cell or a thematic motif must be written differently, if the *Tempo* has changed. If careful rhythmic, formal and thematic analysis shows that this motif must indeed be perceived identically, one should establish the organic relationship between two *Tempi* and follow it up.

From a formal point of view, smaller or longer note values resulting from rhythmic equivalences are a tool and a major help for the defence and reading of metronome markings which have come down to us as metric. This is purely structural practice, much in use in the 18 and 19th c. The fluctuations resulting from doubling or dividing units of time mark the equivalence very precisely. And so musicians will understand they must take into consideration the inner movement of what has just been played and of what is going to be played.

Conclusion :

Setting the bar as the center of gravity of metrical reading is in keeping with the basic principles of music theory. We have endeavoured to prove that, instead of a standardized mechanical reading of metronome markings, careful perusing of a score is the only way to decipher its writing, substance and form.

Two completely opposite principles preside over the decision to take a composer's tempo markings literally. One is a desire to understand how a piece is written, to identify its inner and outer coherence and that of the indications which give us access to its rhythmical reality. This seems to us to be the right path. The other is an approach that tends to isolate *Tempo* markings from their actual conditions of rendition. We fear that this 'unavoidable & legitimate mathematical logic' approach not only leads to a relative view of their value but also renders sterile the musical discourse one supposedly understands. Tools meant and used to determine tempi are fundamental in the formation of thought.

"(...) Grey, my dear friends, are all theories, but green the golden tree of life. (...)"
Goethe / Faust

Maximianno Cobra

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